

MEETING NOTES JANUARY 6, 1985

The January meeting was called to order at 2:30PM at 9 Dartmoor Drive in Northport. Minutes of the last meeting were printed in December-January newsletter.

The Sec'y Treasurer reported that current paid up membership stood at 53. The projected year end (January 31) balance for the treasury is \$200.00. This includes a number of paid up subscriptions through 1986, but will still leave a small balance which will be carried forward. No suggestions for use of the funds were tendered from the floor, during this portion of the meeting.

We have received inquiries about our mailing list and the question of how to handle these was thrown out to the members. It was decided, by voice vote, that we would use a "positive option" plan. That is, members who wish to receive catalogs, etc. and be on our "official" mailing list must so indicate to the membership chairman (currently the Sec'y. Treas.). If you do not specifically request to be on the list sent to outside concerns, you simply won't be on it. (In "computerese," the "default" value is not to be on the list). Bob G. suggested that the meeting host be reimbursed for incidental expenses for the meeting. It was unanimously agreed that the host be provided with \$.50 per attendee to help cover his costs for coffee, donuts, etc.

With 53 (56 as of 1/14) members, the maintenance of the mailing list, let alone the data base, is becoming increasingly difficult. Stewart N. volunteered his services to have the data entered into D-Base III (on his P.C.).

It was recommended that we contact Computer-Living, N.Y. (Ellis Booker (212)-505-2600) to tell them of our support for ZX/TS computers. This will be done.

Costs have been increasing (now 24 pages - 12 sheets). It costs at least 4c/sheet to print and \$.37 to mail the newsletters. We will need to print about 100 copies of this issue.

Dues were raised to \$15.00/year (\$12.00 to charter members who "re-up" prior to the March meeting).

Next meeting will be at H. Wertheuers place in Seaford on February 3rd, Sunday at 2PM. Bring your latest toy. If you have hardware to demo, please bring a power strip. A folding chair, or two, might help, as well.

A Special BASIC - BASIC instructional period will be conducted by Steve Kaye from 1PM to 2PM at Herberts place. If you're a beginner or even an intermediate programmer with a problem, you should attend this class. Steve will concentrate on TS 1000, but, of course, that covers almost 90% of 2068 commands. Steve will probably be the focal point for our TS 1000/ZX81 special interest group, so if you're interested in helping to start up this SIG please contact him.

The meeting broke up and various hardware/software packages were demoed:

Paul D. showed his Sear's RGB monitor (see Article) - Bob G. had his RGB monitor and modified Spectrum, Bob has been able to get color from his Spectrum by changing the crystal. He rewired the Spectrum Power supply for 110 volts, and now has a true Spectrum, which can run here in the states. - Nazir P. demoed his microdrive. Several members had brought in their 2068's at our request and were tested with EMU-1 and Nazir's expansion board (with the 90pf capacitor on A3-NO, we still don't know why that helps!) of ten machines, all but one (mine!) were made to function with the m-drive and "twister". Buss loading seems to be the problem as we found that about 1/2 of all 2068's don't even need the capacitor. The 2068 is apparently just a little too tightly designed. More on this later. Remember, too that, as of right now, m-drives won't work with the ROM without internal changes. Your best bet for now (or until a buffered bus board comes along) is to wait and see. As an example: this past week, my EMU-1 gave up its life for the cause. See Nazer's article for the latest story.

Taswod II was demoed in 64 column mode on Bob's monitor. It looked good on Chuck Russell's \$40 special, B & W monitor too!

SPECIAL NOTES

THE FEBRUARY MEETING WILL SEE THE NOMINATION OF OFFICERS FOR 1985. PLEASE BE PREPARED TO VOTE/VOLUNTEER.

REMEMBER, THIS IS YOUR LAST ISSUE (ACTUALLY AN EXTRA ONE) UNLESS YOU HAD A SPECIAL LATE SUBSCRIPTION, OR ALREADY PAID FOR 1985.

IN THE NEWS:

The January 8th issue of the N.Y. Times contained an article on Orphaned Computers by Peter H. Lewis, which gave us this wonderful little comment.

The orphaned Times, in contrast, seems to have already found greater glory. It was a so-so computer; now it's a state-of-the-art doorstop.



from the Mile High TSUG newsletter



L.I.S.T. GROUP

P.O. BOX 438
 CENTERPORT, N.Y. 11721-0438

Steve Kaye wrote an indignant letter to Mr. Lewis and while obviously still "down" on Times, Mr. Lewis provided a very nice article on our activities and Zebra's in the Tuesday January 22, issue of the Times. No space to publish this issue, but we'll reprint it in full in March.

LISTING Policy:

Annual Dues.....\$15.00 Issue Price \$1.50 (includes P&P)
One "Sample" copy sent upon receipt of large SASE.
Copies provided on exchange basis with other bona fide user groups.
L.I.S.T.ing is published monthly by LIST (Long Island Sinclair Timex) Group
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Your reviews, programs, comments, hardware projects, etc., are eagerly
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Mail sent to the old address must be forwarded there and will take
longer to reach us.

NOTE: PARTIAL YEAR MEMBERSHIPS AVAILABLE

Normal membership year is Feb. through Jan. at cost of \$15.00.(US.)
By keeping as many members as possible on that basis, we keep
our costs and chances of error down.

If you wish to begin subscribing later in the year, please sign
up for the end of this year and all of next.

We will accept partial years or different subscription runs,
on a limited basis (particularly from members outside the U.S.)
But, please be aware that, addition to possible rate increases,
your "account" must be handled "by hand" and errors may occur.
International (IM Canada) subscribers will receive as many
issues as we can afford to mail.

CLASSIFIED ADS

Got something to sell or trade? Members
get a free one time insertion of up to 50
words. 10¢/word-otherwise (your photo ready
copy); 15¢/word-we compose.

SPECTRUM ROMs - \$19.95 (18.00 for List members) includes
P & P. LIST Associates, 10 Idle Day Drive, Centerport,
N.Y. 11721.

DK'Tronics Light Pen (for Spectrum - works on 2068 buss)
\$35.00 (includes P & P) LIST Associates, 10 Idle Day Drive,
Centerport, N.Y. 11721.

A NOTE ON: LIST ASSOCIATES
LISTA is a cooperative buying
service. It is not an official
organ of LIST Group.

LONG ISLAND SINCLAIR TIMEX
GROUP (L.I.S.T.) supports
ZX81, TS 1000 and TS 2068
computers. Annual dues \$15.
- includes a monthly newsletter
and library program cas-
settes. Sample newsletter on
request. Include a large
S.A.S.E. with 37 cents post-
age. Spectrum ROMs for sale
\$19.95 includes P&P.
L.I.S.T. PO Box 438 Center-
port, NY 11721-0438

POLICY ON CONTRIBUTED MATERIAL:

We are always looking for interesting articles, programs, reviews etc. to help
keep our members informed and entertained. Articles submitted for publication
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peers.

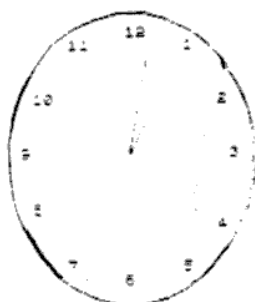
If you have a program or article about something
you've tried, please send it in. Our group interests
are so varied that I can almost certainly guarantee
that someone else can use your expertise to solve
his problem.

February 1985

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TIMEX-SINCLAIR Software/Hardware
(2068-1000 *** SPECTRUM-1000)**
* SMART II Modem software...\$23.88
* ROMSWITCH for 2068 - lets you
2068 run SPECTRUM programs \$49.88
* 2068 PINBALL CARTRIDGE...\$19.95
* VU-FILE/VU-CALC/VU-3D-ea.\$15.95
* Many SPECTRUM Titles below \$20.
* 2068 MICRO-DRIVE SYSTEM.\$189.88
* Send a 2 stamp LSASE for our
complete catalog !!
*** SUM-WARE ***
810 Mamot ALDEN NY 14004

2-85



```

100 REM HEX, DEC
110 POKE 30000,1
120 POKE 30003,201
130 LET X=30001
140 LET A$=""
150 WHILE A$="" THEN INPUT A$
160 PRINT A$
170 IF A$="" THEN GO TO 120
180 POKE X,16+CODE A$+CODE A$*2
190 LET X=X+1
200 LET A$=A$(3 TO )
210 GO TO 150
220 PRINT " ";PEEK (X-2)+256+P
230 X=X-1

```

THIS PROGRAM IS FOR THE 1000.
ENTER FIRST 2 DIGITS OF HEX NUM
BER, THEN NEXT 2. ENTER SPACE T
O GET ANSWER.

Excerpts from the Spectrum Microdrive handbook

The MOVE statement

So far, you have only been able to move data from a program to a channel or vice versa. The **MOVE** statement, however, enables you to move data from one channel to another. For example, to move data from the keyboard to the screen, enter:

```
10 MOVE #1 TO #2
```

then:

```
RUN
```

Anything you type on the keyboard will now appear on the screen. However, you will discover that when you press **BREAK** this only prints a space on the screen. To escape from this trap, press **ENTER** until the print position reaches the bottom of the screen. Then, when the computer asks scroll? you should press **BREAK**. (You should, by the way, avoid moving data from the keyboard to any other stream since you may be unable to **BREAK** out of such a mode.)

Using the **MOVE** statement you can also examine files stored in cartridges. For example, set up the file "Numbers" (see page 23) and then, to examine its contents, enter:

```
10 MOVE "m";1;"Numbers" TO #2
```

(Note that you need not **OPEN** or **CLOSE** the file yourself. **MOVE** does this.)

Similarly, to make a copy of the file "Numbers" enter:

```
10 MOVE "m";1;"Numbers" TO "m";1;"Numbers 2"
```

Here, **MOVE** opens a stream for reading from the existing file ("Numbers") and another for writing to the new file ("Numbers 2"). Next, it reads the data in "Numbers" and writes it out in "Numbers 2". Then it closes both streams.

MOVE will work with stream numbers (such as #4), and with channel specifiers (such as "m";1;"Numbers"). Note, however, that the established streams, #1 to #3, may not be specified by the channel specifiers K, S or P.

If you have a second Microdrive, you can use the **MOVE** statement to make back-up copies of data in another cartridge. Enter:

```
10 MOVE "m";1;"Numbers" TO "m";2;"Numbers 2"
```

(Note that **MOVE** only works with data files. If you want a back-up copy of a program, you must **LOAD** the program, and then **SAVE** it.)

The extended BASIC

The ZX Interface 1 extends the BASIC already in the Spectrum. The extensions and additions are summarised below.

Streams

Streams are specified as #n where n is a number in the range 1-15. Streams 1, 2 and 3 are usually used by BASIC. The # character is part of the keyword for the **OPEN** # and **CLOSE** # statements.

Channels

There are seven types of channel in the extended BASIC; the keyboard (k), the screen (s), the ZX Printer (p), the text RS232 Interface (t), the binary RS232 Interface (b), the network (n) and the Microdrive (m).

Each channel type is specified by its letter which may be upper case or lower case. The network and Microdrive require additional information to specify the channel completely.

A network channel requires a station number, so a network channel is specified as "n";x where x is a station number in the range 0-64.

A Microdrive channel requires a Microdrive number and a file name, so a Microdrive channel is specified as "m";y;"name" where y is the Microdrive number in the range of 1-8 and "name" is a string of between 1 and 10 characters.

```

100 REM CLOCK
110 INIT
120 POKE 30000,1
130 POKE 30003,201
140 LET X=30001
150 WHILE A$="" THEN INPUT A$
160 PRINT A$
170 IF A$="" THEN GO TO 120
180 POKE X,16+CODE A$+CODE A$*2
190 LET X=X+1
200 LET A$=A$(3 TO )
210 GO TO 150
220 PRINT " ";PEEK (X-2)+256+P
230 X=X-1
240 RETURN
250
260 REM CLOCK
270 INIT
280 POKE 30000,1
290 POKE 30003,201
300 LET X=30001
310 WHILE A$="" THEN INPUT A$
320 PRINT A$
330 IF A$="" THEN GO TO 280
340 POKE X,16+CODE A$+CODE A$*2
350 LET X=X+1
360 LET A$=A$(3 TO )
370 GO TO 310
380 PRINT " ";PEEK (X-2)+256+P
390 X=X-1
400 RETURN
410
420 REM CLOCK
430 INIT
440 POKE 30000,1
450 POKE 30003,201
460 LET X=30001
470 WHILE A$="" THEN INPUT A$
480 PRINT A$
490 IF A$="" THEN GO TO 440
500 POKE X,16+CODE A$+CODE A$*2
510 LET X=X+1
520 LET A$=A$(3 TO )
530 GO TO 470
540 PRINT " ";PEEK (X-2)+256+P
550 X=X-1
560 RETURN
570
580 REM CLOCK
590 INIT
600 POKE 30000,1
610 POKE 30003,201
620 LET X=30001
630 WHILE A$="" THEN INPUT A$
640 PRINT A$
650 IF A$="" THEN GO TO 600
660 POKE X,16+CODE A$+CODE A$*2
670 LET X=X+1
680 LET A$=A$(3 TO )
690 GO TO 630
700 PRINT " ";PEEK (X-2)+256+P
710 X=X-1
720 RETURN
730
740 REM CLOCK
750 INIT
760 POKE 30000,1
770 POKE 30003,201
780 LET X=30001
790 WHILE A$="" THEN INPUT A$
800 PRINT A$
810 IF A$="" THEN GO TO 760
820 POKE X,16+CODE A$+CODE A$*2
830 LET X=X+1
840 LET A$=A$(3 TO )
850 GO TO 790
860 PRINT " ";PEEK (X-2)+256+P
870 X=X-1
880 RETURN
890
900 REM CLOCK
910 INIT
920 POKE 30000,1
930 POKE 30003,201
940 LET X=30001
950 WHILE A$="" THEN INPUT A$
960 PRINT A$
970 IF A$="" THEN GO TO 920
980 POKE X,16+CODE A$+CODE A$*2
990 LET X=X+1
1000 LET A$=A$(3 TO )
1010 GO TO 950
1020 PRINT " ";PEEK (X-2)+256+P
1030 X=X-1
1040 RETURN
1050
1060 REM CLOCK
1070 INIT
1080 POKE 30000,1
1090 POKE 30003,201
1100 LET X=30001
1110 WHILE A$="" THEN INPUT A$
1120 PRINT A$
1130 IF A$="" THEN GO TO 1080
1140 POKE X,16+CODE A$+CODE A$*2
1150 LET X=X+1
1160 LET A$=A$(3 TO )
1170 GO TO 1110
1180 PRINT " ";PEEK (X-2)+256+P
1190 X=X-1
1200 RETURN
1210
1220 REM CLOCK
1230 INIT
1240 POKE 30000,1
1250 POKE 30003,201
1260 LET X=30001
1270 WHILE A$="" THEN INPUT A$
1280 PRINT A$
1290 IF A$="" THEN GO TO 1240
1300 POKE X,16+CODE A$+CODE A$*2
1310 LET X=X+1
1320 LET A$=A$(3 TO )
1330 GO TO 1270
1340 PRINT " ";PEEK (X-2)+256+P
1350 X=X-1
1360 RETURN
1370
1380 REM CLOCK
1390 INIT
1400 POKE 30000,1
1410 POKE 30003,201
1420 LET X=30001
1430 WHILE A$="" THEN INPUT A$
1440 PRINT A$
1450 IF A$="" THEN GO TO 1400
1460 POKE X,16+CODE A$+CODE A$*2
1470 LET X=X+1
1480 LET A$=A$(3 TO )
1490 GO TO 1430
1500 PRINT " ";PEEK (X-2)+256+P
1510 X=X-1
1520 RETURN
1530
1540 REM CLOCK
1550 INIT
1560 POKE 30000,1
1570 POKE 30003,201
1580 LET X=30001
1590 WHILE A$="" THEN INPUT A$
1600 PRINT A$
1610 IF A$="" THEN GO TO 1560
1620 POKE X,16+CODE A$+CODE A$*2
1630 LET X=X+1
1640 LET A$=A$(3 TO )
1650 GO TO 1590
1660 PRINT " ";PEEK (X-2)+256+P
1670 X=X-1
1680 RETURN
1690
1700 REM CLOCK
1710 INIT
1720 POKE 30000,1
1730 POKE 30003,201
1740 LET X=30001
1750 WHILE A$="" THEN INPUT A$
1760 PRINT A$
1770 IF A$="" THEN GO TO 1720
1780 POKE X,16+CODE A$+CODE A$*2
1790 LET X=X+1
1800 LET A$=A$(3 TO )
1810 GO TO 1750
1820 PRINT " ";PEEK (X-2)+256+P
1830 X=X-1
1840 RETURN
1850
1860 REM CLOCK
1870 INIT
1880 POKE 30000,1
1890 POKE 30003,201
1900 LET X=30001
1910 WHILE A$="" THEN INPUT A$
1920 PRINT A$
1930 IF A$="" THEN GO TO 1880
1940 POKE X,16+CODE A$+CODE A$*2
1950 LET X=X+1
1960 LET A$=A$(3 TO )
1970 GO TO 1910
1980 PRINT " ";PEEK (X-2)+256+P
1990 X=X-1
2000 RETURN
2010
2020 REM CLOCK
2030 INIT
2040 POKE 30000,1
2050 POKE 30003,201
2060 LET X=30001
2070 WHILE A$="" THEN INPUT A$
2080 PRINT A$
2090 IF A$="" THEN GO TO 2040
2100 POKE X,16+CODE A$+CODE A$*2
2110 LET X=X+1
2120 LET A$=A$(3 TO )
2130 GO TO 2070
2140 PRINT " ";PEEK (X-2)+256+P
2150 X=X-1
2160 RETURN
2170
2180 REM CLOCK
2190 INIT
2200 POKE 30000,1
2210 POKE 30003,201
2220 LET X=30001
2230 WHILE A$="" THEN INPUT A$
2240 PRINT A$
2250 IF A$="" THEN GO TO 2200
2260 POKE X,16+CODE A$+CODE A$*2
2270 LET X=X+1
2280 LET A$=A$(3 TO )
2290 GO TO 2230
2300 PRINT " ";PEEK (X-2)+256+P
2310 X=X-1
2320 RETURN
2330
2340 REM CLOCK
2350 INIT
2360 POKE 30000,1
2370 POKE 30003,201
2380 LET X=30001
2390 WHILE A$="" THEN INPUT A$
2400 PRINT A$
2410 IF A$="" THEN GO TO 2360
2420 POKE X,16+CODE A$+CODE A$*2
2430 LET X=X+1
2440 LET A$=A$(3 TO )
2450 GO TO 2390
2460 PRINT " ";PEEK (X-2)+256+P
2470 X=X-1
2480 RETURN
2490
2500 REM CLOCK
2510 INIT
2520 POKE 30000,1
2530 POKE 30003,201
2540 LET X=30001
2550 WHILE A$="" THEN INPUT A$
2560 PRINT A$
2570 IF A$="" THEN GO TO 2520
2580 POKE X,16+CODE A$+CODE A$*2
2590 LET X=X+1
2600 LET A$=A$(3 TO )
2610 GO TO 2550
2620 PRINT " ";PEEK (X-2)+256+P
2630 X=X-1
2640 RETURN
2650
2660 REM CLOCK
2670 INIT
2680 POKE 30000,1
2690 POKE 30003,201
2700 LET X=30001
2710 WHILE A$="" THEN INPUT A$
2720 PRINT A$
2730 IF A$="" THEN GO TO 2680
2740 POKE X,16+CODE A$+CODE A$*2
2750 LET X=X+1
2760 LET A$=A$(3 TO )
2770 GO TO 2710
2780 PRINT " ";PEEK (X-2)+256+P
2790 X=X-1
2800 RETURN
2810
2820 REM CLOCK
2830 INIT
2840 POKE 30000,1
2850 POKE 30003,201
2860 LET X=30001
2870 WHILE A$="" THEN INPUT A$
2880 PRINT A$
2890 IF A$="" THEN GO TO 2840
2900 POKE X,16+CODE A$+CODE A$*2
2910 LET X=X+1
2920 LET A$=A$(3 TO )
2930 GO TO 2870
2940 PRINT " ";PEEK (X-2)+256+P
2950 X=X-1
2960 RETURN
2970
2980 REM CLOCK
2990 INIT
3000 POKE 30000,1
3010 POKE 30003,201
3020 LET X=30001
3030 WHILE A$="" THEN INPUT A$
3040 PRINT A$
3050 IF A$="" THEN GO TO 3000
3060 POKE X,16+CODE A$+CODE A$*2
3070 LET X=X+1
3080 LET A$=A$(3 TO )
3090 GO TO 3030
3100 PRINT " ";PEEK (X-2)+256+P
3110 X=X-1
3120 RETURN
3130
3140 REM CLOCK
3150 INIT
3160 POKE 30000,1
3170 POKE 30003,201
3180 LET X=30001
3190 WHILE A$="" THEN INPUT A$
3200 PRINT A$
3210 IF A$="" THEN GO TO 3160
3220 POKE X,16+CODE A$+CODE A$*2
3230 LET X=X+1
3240 LET A$=A$(3 TO )
3250 GO TO 3190
3260 PRINT " ";PEEK (X-2)+256+P
3270 X=X-1
3280 RETURN
3290
3300 REM CLOCK
3310 INIT
3320 POKE 30000,1
3330 POKE 30003,201
3340 LET X=30001
3350 WHILE A$="" THEN INPUT A$
3360 PRINT A$
3370 IF A$="" THEN GO TO 3320
3380 POKE X,16+CODE A$+CODE A$*2
3390 LET X=X+1
3400 LET A$=A$(3 TO )
3410 GO TO 3350
3420 PRINT " ";PEEK (X-2)+256+P
3430 X=X-1
3440 RETURN
3450
3460 REM CLOCK
3470 INIT
3480 POKE 30000,1
3490 POKE 30003,201
3500 LET X=30001
3510 WHILE A$="" THEN INPUT A$
3520 PRINT A$
3530 IF A$="" THEN GO TO 3480
3540 POKE X,16+CODE A$+CODE A$*2
3550 LET X=X+1
3560 LET A$=A$(3 TO )
3570 GO TO 3510
3580 PRINT " ";PEEK (X-2)+256+P
3590 X=X-1
3600 RETURN
3610
3620 REM CLOCK
3630 INIT
3640 POKE 30000,1
3650 POKE 30003,201
3660 LET X=30001
3670 WHILE A$="" THEN INPUT A$
3680 PRINT A$
3690 IF A$="" THEN GO TO 3640
3700 POKE X,16+CODE A$+CODE A$*2
3710 LET X=X+1
3720 LET A$=A$(3 TO )
3730 GO TO 3670
3740 PRINT " ";PEEK (X-2)+256+P
3750 X=X-1
3760 RETURN
3770
3780 REM CLOCK
3790 INIT
3800 POKE 30000,1
3810 POKE 30003,201
3820 LET X=30001
3830 WHILE A$="" THEN INPUT A$
3840 PRINT A$
3850 IF A$="" THEN GO TO 3800
3860 POKE X,16+CODE A$+CODE A$*2
3870 LET X=X+1
3880 LET A$=A$(3 TO )
3890 GO TO 3830
3900 PRINT " ";PEEK (X-2)+256+P
3910 X=X-1
3920 RETURN
3930
3940 REM CLOCK
3950 INIT
3960 POKE 30000,1
3970 POKE 30003,201
3980 LET X=30001
3990 WHILE A$="" THEN INPUT A$
4000 PRINT A$
4010 IF A$="" THEN GO TO 3960
4020 POKE X,16+CODE A$+CODE A$*2
4030 LET X=X+1
4040 LET A$=A$(3 TO )
4050 GO TO 3990
4060 PRINT " ";PEEK (X-2)+256+P
4070 X=X-1
4080 RETURN
4090
4100 REM CLOCK
4110 INIT
4120 POKE 30000,1
4130 POKE 30003,201
4140 LET X=30001
4150 WHILE A$="" THEN INPUT A$
4160 PRINT A$
4170 IF A$="" THEN GO TO 4120
4180 POKE X,16+CODE A$+CODE A$*2
4190 LET X=X+1
4200 LET A$=A$(3 TO )
4210 GO TO 4150
4220 PRINT " ";PEEK (X-2)+256+P
4230 X=X-1
4240 RETURN
4250
4260 REM CLOCK
4270 INIT
4280 POKE 30000,1
4290 POKE 30003,201
4300 LET X=30001
4310 WHILE A$="" THEN INPUT A$
4320 PRINT A$
4330 IF A$="" THEN GO TO 4280
4340 POKE X,16+CODE A$+CODE A$*2
4350 LET X=X+1
4360 LET A$=A$(3 TO )
4370 GO TO 4310
4380 PRINT " ";PEEK (X-2)+256+P
4390 X=X-1
4400 RETURN
4410
4420 REM CLOCK
4430 INIT
4440 POKE 30000,1
4450 POKE 30003,201
4460 LET X=30001
4470 WHILE A$="" THEN INPUT A$
4480 PRINT A$
4490 IF A$="" THEN GO TO 4440
4500 POKE X,16+CODE A$+CODE A$*2
4510 LET X=X+1
4520 LET A$=A$(3 TO )
4530 GO TO 4470
4540 PRINT " ";PEEK (X-2)+256+P
4550 X=X-1
4560 RETURN
4570
4580 REM CLOCK
4590 INIT
4600 POKE 30000,1
4610 POKE 30003,201
4620 LET X=30001
4630 WHILE A$="" THEN INPUT A$
4640 PRINT A$
4650 IF A$="" THEN GO TO 4600
4660 POKE X,16+CODE A$+CODE A$*2
4670 LET X=X+1
4680 LET A$=A$(3 TO )
4690 GO TO 4630
4700 PRINT " ";PEEK (X-2)+256+P
4710 X=X-1
4720 RETURN
4730
4740 REM CLOCK
4750 INIT
4760 POKE 30000,1
4770 POKE 30003,201
4780 LET X=30001
4790 WHILE A$="" THEN INPUT A$
4800 PRINT A$
4810 IF A$="" THEN GO TO 4760
4820 POKE X,16+CODE A$+CODE A$*2
4830 LET X=X+1
4840 LET A$=A$(3 TO )
4850 GO TO 4790
4860 PRINT " ";PEEK (X-2)+256+P
4870 X=X-1
4880 RETURN
4890
4900 REM CLOCK
4910 INIT
4920 POKE 30000,1
4930 POKE 30003,201
4940 LET X=30001
4950 WHILE A$="" THEN INPUT A$
4960 PRINT A$
4970 IF A$="" THEN GO TO 4920
4980 POKE X,16+CODE A$+CODE A$*2
4990 LET X=X+1
5000 LET A$=A$(3 TO )
5010 GO TO 4950
5020 PRINT " ";PEEK (X-2)+256+P
5030 X=X-1
5040 RETURN
5050
5060 REM CLOCK
5070 INIT
5080 POKE 30000,1
5090 POKE 30003,201
5100 LET X=30001
5110 WHILE A$="" THEN INPUT A$
5120 PRINT A$
5130 IF A$="" THEN GO TO 5080
5140 POKE X,16+CODE A$+CODE A$*2
5150 LET X=X+1
5160 LET A$=A$(3 TO )
5170 GO TO 5110
5180 PRINT " ";PEEK (X-2)+256+P
5190 X=X-1
5200 RETURN
5210
5220 REM CLOCK
5230 INIT
5240 POKE 30000,1
5250 POKE 30003,201
5260 LET X=30001
5270 WHILE A$="" THEN INPUT A$
5280 PRINT A$
5290 IF A$="" THEN GO TO 5240
5300 POKE X,16+CODE A$+CODE A$*2
5310 LET X=X+1
5320 LET A$=A$(3 TO )
5330 GO TO 5270
5340 PRINT " ";PEEK (X-2)+256+P
5350 X=X-1
5360 RETURN
5370
5380 REM CLOCK
5390 INIT
5400 POKE 30000,1
5410 POKE 30003,201
5420 LET X=30001
5430 WHILE A$="" THEN INPUT A$
5440 PRINT A$
5450 IF A$="" THEN GO TO 5400
5460 POKE X,16+CODE A$+CODE A$*2
5470 LET X=X+1
5480 LET A$=A$(3 TO )
5490 GO TO 5430
5500 PRINT " ";PEEK (X-2)+256+P
5510 X=X-1
5520 RETURN
5530
5540 REM CLOCK
5550 INIT
5560 POKE 30000,1
5570 POKE 30003,201
5580 LET X=30001
5590 WHILE A$="" THEN INPUT A$
5600 PRINT A$
5610 IF A$="" THEN GO TO 5560
5620 POKE X,16+CODE A$+CODE A$*2
5630 LET X=X+1
5640 LET A$=A$(3 TO )
5650 GO TO 5590
5660 PRINT " ";PEEK (X-2)+256+P
5670 X=X-1
5680 RETURN
5690
5700 REM CLOCK
5710 INIT
5720 POKE 30000,1
5730 POKE 30003,201
5740 LET X=30001
5750 WHILE A$="" THEN INPUT A$
5760 PRINT A$
5770 IF A$="" THEN GO TO 5720
5780 POKE X,16+CODE A$+CODE A$*2
5790 LET X=X+1
5800 LET A$=A$(3 TO )
5810 GO TO 5750
5820 PRINT " ";PEEK (X-2)+256+P
5830 X=X-1
5840 RETURN
5850
5860 REM CLOCK
5870 INIT
5880 POKE 30000,1
5890 POKE 30003,201
5900 LET X=30001
5910 WHILE A$="" THEN INPUT A$
5920 PRINT A$
5930 IF A$="" THEN GO TO 5880
5940 POKE X,16+CODE A$+CODE A$*2
5950 LET X=X+1
5960 LET A$=A$(3 TO )
5970 GO TO 5910
5980 PRINT " ";PEEK (X-2)+256+P
5990 X=X-1
6000 RETURN
6010
6020 REM CLOCK
6030 INIT
6040 POKE 30000,1
6050 POKE 30003,201
6060 LET X=30001
6070 WHILE A$="" THEN INPUT A$
6080 PRINT A$
6090 IF A$="" THEN GO TO 6040
6100 POKE X,16+CODE A$+CODE A$*2
6110 LET X=X+1
6120 LET A$=A$(3 TO )
6130 GO TO 6070
6140 PRINT " ";PEEK (X-2)+256+P
6150 X=X-1
6160 RETURN
6170
6180 REM CLOCK
6190 INIT
6200 POKE 30000,1
6210 POKE 30003,201
6220 LET X=30001
6230 WHILE A$="" THEN INPUT A$
6240 PRINT A$
6250 IF A$="" THEN GO TO 6200
6260 POKE X,16+CODE A$+CODE A$*2
6270 LET X=X+1
6280 LET A$=A$(3 TO )
6290 GO TO 6230
6300 PRINT " ";PEEK (X-2)+256+P
6310 X=X-1
6320 RETURN
6330
6340 REM CLOCK
6350 INIT
6360 POKE 30000,1
6370 POKE 30003,201
6380 LET X=30001
6390 WHILE A$="" THEN INPUT A$
6400 PRINT A$
6410 IF A$="" THEN GO TO 6360
6420 POKE X,16+CODE A$+CODE A$*2
6430 LET X=X+1
6440 LET A$=A$(3 TO )
6450 GO TO 6390
6460 PRINT " ";PEEK (X-2)+256+P
6470 X=X-1
6480 RETURN
6490
6500 REM CLOCK
6510 INIT
6520 POKE 30000,1
6530 POKE 30003,201
6540 LET X=30001
6550 WHILE A$="" THEN INPUT A$
6560 PRINT A$
6570 IF A$="" THEN GO TO 6520
6580 POKE X,16+CODE A$+CODE A$*2
6590 LET X=X+1
6600 LET A$=A$(3 TO )
6610 GO TO 6550
6620 PRINT " ";PEEK (X-2)+256+P
6630 X=X-1
6640 RETURN
6650
6660 REM CLOCK
6670 INIT
6680 POKE 30000,1
6690 POKE 30003,201
6700 LET X=30001
6710 WHILE A$="" THEN INPUT A$
6720 PRINT A$
6730 IF A$="" THEN GO TO 6680
6740 POKE X,16+CODE A$+CODE A$*2
6750 LET X=X+1
6760 LET A$=A$(3 TO )
6770 GO TO 6710
6780 PRINT " ";PEEK (X-2)+256+P
6790 X=X-1
6800 RETURN
6810
6820 REM CLOCK
6830 INIT
6840 POKE 30000,1
6850 POKE 30003,201
6860 LET X=30001
6870 WHILE A$="" THEN INPUT A$
6880 PRINT A$
6890 IF A$="" THEN GO TO 6840
6900 POKE X,16+CODE A$+CODE A$*2
6910 LET X=X+1
6920 LET A$=A$(3 TO )
6930 GO TO 6870
6940 PRINT " ";PEEK (X-2)+256+P
6950 X=X-1
6960 RETURN
6970
6980 REM CLOCK
6990 INIT
7000 POKE 30000,1
7010 POKE 30003,201
7020 LET X=30001
7030 WHILE A$="" THEN INPUT A$
7040 PRINT A$
7050 IF A$="" THEN GO TO 7000
7060 POKE X,16+CODE A$+CODE A$*2
7070 LET X=X+1
7080 LET A$=A$(3 TO )
7090 GO TO 7030
7100 PRINT " ";PEEK (X-2)+256+P
7110 X=X-1
7120 RETURN
7130
7140 REM CLOCK
7150 INIT
7160 POKE 30000,1
7170 POKE 30003,201
7180 LET X=30001
7190 WHILE A$="" THEN INPUT A$
7200 PRINT A$
7210 IF A$="" THEN GO TO 7160
7220 POKE X,16+CODE A$+CODE A$*2
7230 LET X=X+1
7240 LET A$=A$(3 TO )
7250 GO TO 7190
7260 PRINT " ";PEEK (X-2)+256+P
7270 X=X-1
7280 RETURN
7290
7300 REM CLOCK
7310 INIT
7320 POKE 30000,1
7330 POKE 30003,201
7340 LET X=30001
7350 WHILE A$="" THEN INPUT A$
7360 PRINT A$
7370 IF A$="" THEN GO TO 7320
7380 POKE X,16+CODE A$+CODE A$*2
7390 LET X=X+1
7400 LET A$=A$(3 TO )
7410 GO TO 7350
7420 PRINT " ";PEEK (X-2)+256+P
7430 X=X-1
7440 RETURN
7450
7460 REM CLOCK
7470 INIT
7480 POKE 30000,1
7490 POKE 30003,201
7500 LET X=30001
7510 WHILE A$="" THEN INPUT A$
7520 PRINT A$
7530 IF A$="" THEN GO TO 7480
7540 POKE X,16+CODE A$+CODE A$*2
7550 LET X=X+1
7560 LET A$=A$(3 TO )
7570 GO TO 7510
7580 PRINT " ";PEEK (X-2)+256+P
7590 X=X-1
7600 RETURN
7610
7620 REM CLOCK
7630 INIT
7640 POKE 30000,1
7650 POKE 30003,201
7660 LET X=30001
7670 WHILE A$="" THEN INPUT A$
7680 PRINT A$
7690 IF A$="" THEN GO TO 7640
7700 POKE X,16+CODE A$+CODE A$*2
7710 LET X=X+1
7720 LET A$=A$(3 TO )
7730 GO TO 7670
7740 PRINT " ";PEEK (X-2)+256+P
7750 X=X-1
7760 RETURN
7770
7780 REM CLOCK
7790 INIT
7800 POKE 30000,1
7810 POKE 30003,201
7820 LET X=30001
7830 WHILE A$="" THEN INPUT A$
7840 PRINT A$
7850 IF A$="" THEN GO TO 7800
7860 POKE X,16+CODE A$+CODE A$*2
7870 LET X=X+1
7880 LET A$=A$(3 TO )
7890 GO TO 7830
7900 PRINT " ";PEEK (X-2)+256+P
7910 X=X-1
7920 RETURN
7930
7940 REM CLOCK
7950 INIT
7960 POKE 30000,1
7970 POKE 30003,201
7980 LET X=30001
7990 WHILE A$="" THEN INPUT A$
8000 PRINT A$
8010 IF A$="" THEN GO TO 7960
8020 POKE X,16+CODE A$+CODE A$*2
8030 LET X=X+1
8040 LET A$=A$(3 TO )
8050 GO TO 7990
8060 PRINT " ";PEEK (X-2)+256+P
8070 X=X-1
8080 RETURN
8090
8100 REM CLOCK
8110 INIT
8120 POKE 30000,1
8130 POKE 30003,201
8140 LET X=30001
8150 WHILE A$="" THEN INPUT A$
8160 PRINT A$
8170 IF A$="" THEN GO TO 8120
8180 POKE X,16+CODE A$+CODE A$*2
8190 LET X=X+1
8200 LET A$=A$(3 TO )
8210 GO TO 8150
8220 PRINT " ";PEEK (X-2)+256+P
8230 X=X-1
8240 RETURN
8250
8260 REM CLOCK
8270 INIT
8280 POKE 30000,1
8290 POKE 30003,201
8300 LET X=30001
8310 WHILE A$="" THEN INPUT A$
8320 PRINT A$
8330 IF A$="" THEN GO TO 8280
8340 POKE X,16+CODE A$+CODE A$*2
8350 LET X=X+1
8360 LET A$=A$(3 TO )
8370 GO TO 8310
8380 PRINT " ";PEEK (X-2)+256+P
8390 X=X-1
8400 RETURN
8410
8420 REM CLOCK
8430 INIT
8440 POKE 30000,1
8450 POKE 30003,201
8460 LET X=30001
8470 WHILE A$="" THEN INPUT A$
8480 PRINT A$
8490 IF A$="" THEN GO TO 8440
8500 POKE X,16+CODE A$+CODE A$*2
8510 LET X=X+1
8520 LET A$=A$(3 TO )
8530 GO TO 8470
8540 PRINT " ";PEEK (X-2)+256+P
8550 X=X-1
8560 RETURN
8570
8580 REM CLOCK
8590 INIT
8600 POKE 3
```

PROGRAM FOR AUTOMATIC SAVE,LOAD,VERIFY, FOR BASIC TASWIDE AND TASMAN INTERFACE

Here is a pair of utilities from Richard Cunningham. Lines 1 through 95 through 6000 through 9010 are for automatic SAVE,LOAD and verify of your program (in lines 100 to 5,000) and the Tasman utilities.

The remainder of the listed program is a list/data program. See Richard's letter for more info. Note that you'll need to dimension or establish R\$ as the name of your program or data set.

RICHARD J. CUNNINGHAM

```

1 REM BOTHTS CODE LOAD
2 REM CLEAR 63223 BEFORE LOADING
3 BEEP .3,35: PRINT AT 10,3: INVERSE 1: WAIT-LOADING "BOTHTS" CODE
4 LOAD "CODE"
5 CLS: BEEP .5,20: INK 9
6 RANDOMIZE USR 64719: REM activate printer interface
7 REM USE CHR$(2) FOR 32 CPL.      CHR$(3) FOR 64 CPL
8 POKE 23658,8
9 POKE 23689,50
10 INPUT "ENTER TODAY'S DATE: "; D$
11 LET C$=""
12 GO TO 110
13 REM MENU
14 CLS: BEEP .5,35
15 PRINT AT 0,15-((LEN F$(1)/2)): PAPER 6: BRIGHT 1: F$(1)
16 PRINT TAB 15-((LEN D$(2)/2)): INK 9: PAPER 1: BRIGHT 1: D$
17 PRINT FLASH 1: PAPER 2:
18 PRINT AT 4,0: "TO BEGIN OR ADD TO FILE: "; TAB 30: 1
19 PRINT AT 6,0: "TO SET PRIORITIES: "; TAB 30: 2
20 PRINT AT 8,0: "TO DELETE FROM FILE: "; TAB 30: 3
21 PRINT AT 10,0: "TO CLEAR DATA FOR NEW ENTRY: "; TAB 30: 4
22 PRINT AT 12,0: "TO SEE FILE: "; TAB 30: 5
23 PRINT AT 14,0: "TO SAVE BASIC + DATA TO TAPE: "; TAB 30: 6
24 PRINT AT 16,0: "TO SAVE DATA TO TAPE: "; TAB 30: 7
25 PRINT AT 18,0: "TO LOAD DATA: "; TAB 30: 8
26 PRINT AT 20,0: "TO ENTER ONE OF ABOVE"
27 LET Y$=INKEY$
28 IF CODE Y$(49 OR CODE Y$(56) THEN GO TO 330
29 BEEP .1,10
30 CLS
31 GO TO VAL Y$*1000
32 GO SUB 9000
33 PRINT PAPER 6: "ENTER ITEMS ONE BY ONE (60 CHAR.MAX.). IF YOU HAVE NO MORE T
34 ENTER, JUST PRESS ENTER."
35 FOR N=R(1)+1 TO 25
36 PRINT N: " "
37 INPUT A$(N)
38 BEEP .1,30
39 IF A$(N,1)="" THEN GO TO 1100
40 PRINT A$(N)
41 NEXT N
42 LET R(1)=N-1
43 GO TO 100
44 PRINT FLASH 1: PAPER 6: "PRESS Z TO COPY: ENTER TO RETURN:"
45 GO SUB 9000
46 PRINT INK 9: PAPER 6: "PRESS NUMBERS IN ORDER YOU WISH" "ITEMS TO BE LISTED
47
48 GO SUB 2500
49 FOR I=1 TO R(1)
50 GO SUB 2500
51 INPUT A
52 BEEP .1,30
53 LET B$(I)=A$(A)
54 LET A$(A)=""
55 NEXT I
56 FOR N=1 TO R(1)
57 LET A$(N)=B$(N)
58 LET B$(N)=""
59 NEXT N

```

Base
Load

```

100 GO SUB 2500
101 PRINT PAPER 6: CHR$(2)
102 PAUSE 0
103 GO TO 100
104 PRINT AT 2,0:
105 FOR N=1 TO R(1)
106 PRINT N: " " A$(N)
107 NEXT N
108 RETURN
109 GO SUB 9000
110 PRINT INK 9: PAPER 5: "ENTER NUMBER OF ITEM TO DELETE: " "ENTER 100 WHEN FIN
111 SHED:
112 GO SUB 2500
113 INPUT A
114 IF A=100 THEN GO TO 100
115 BEEP .1,30
116 FOR N=A TO R(1)-1
117 LET A$(N)=A$(N+1)
118 NEXT N
119 LET R(1)=R(1)-1
120 CLS
121 GO TO 3003
122 BEEP .2,25
123 PRINT BRIGHT 1: PAPER 2: "ARE YOU SURE YOU WANT TO ERASE?"
124 PRINT AT 10,1: "PRESS "M" TO RETURN TO MENU"
125 PRINT : PRINT TAB 1: "PRESS "D" FOR NEW DATA ENTRY"
126 PRINT PAPER 2: BRIGHT 1: "Pressing "D" erases all data"
127 IF INKEY$="M" THEN GO TO 100
128 IF INKEY$="D" THEN BEEP .2,35: GO TO 4070
129 GO TO 4040
130 CLS: PRINT AT 10,0: PAPER 3: "ENTER NEW FILE NAME: MAX.10 CHAR."
131 DIM F$(1,10)
132 POKE 23658,8
133 INPUT E$
134 POKE 23658,8
135 IF LEN E$>10 THEN PRINT AT 20,1: FLASH 1: BRIGHT 1: PAPER 2: "TOO MANY CH
136 ARACTERS--RE-ENTER " BEEP .1,-15: PAUSE 60: GO TO 4070
137 LET F$(1)=E$: LET E$=""
138 PRINT PAPER 2: "NEW FILE NAME: "; PAPER 6: F$(1)
139 DIM A$(25,60)
140 LET R(1)=0
141 PAUSE 120: GO TO 50
142 GO SUB 9000
143 PRINT INK 9: PAPER 5: F$(1): TAB 12: "FOR: "; D$
144 PRINT G$
145 GO SUB 2500
146 PRINT PAPER 6: "PRESS Z TO COPY: ENTER TO RETURN:"
147 PRINT G$
148 PAUSE 0
149 IF INKEY$="Z" OR INKEY$="X" THEN GO TO 5060
150 GO TO 100
151 LPRINT " " F$(1): " FOR: "; D$: " "
152 LPRINT
153 FOR N=1 TO R(1)
154 "N: " A$(N)
155 NEXT N
156 LPRINT : LPRINT : LPRINT : LPRINT
157 LPRINT
158 GO TO 100
159 PRINT FLASH 1: PAPER 6: "PRESS Z TO COPY: ENTER TO RETURN:"
160 CLS: PRINT AT 10,0: PAPER 2: "SAVING BASIC: PROG: "; F$(1)
161 SAVE F$(1) LINE 1: BEEP .3,35: GO TO 6020
162 PRINT PAPER 2: "SAVING "BOTHTS" CODE"
163 SAVE "bothts" CODE 63222,2146: GO TO 6060
164 CLS: BEEP .3,30: PRINT PAPER 3: "To verify save: rewind/play tape"
165 "If verify fails use goto 100"
166 VERIFY F$(1): GO TO 6000
167 VERIFY "bothts" CODE: GO TO 6090
168 PRINT AT 15,9: FLASH 1: PAPER 2: "O.K. SAVE VERIFIED": PAUSE 120: GO
169 TO 100
170 STOP
171 CLS: PRINT AT 10,0: PAPER 2: BRIGHT 1: "SAVING DATA: "; F$(1)
172 SAVE F$(1) DATA F$: BEEP .3,35: GO TO 7015
173 SAVE F$(1) DATA R: BEEP .3,35: GO TO 7020
174 SAVE F$(1) DATA A$: GO TO 7025
175 CLS: BEEP .5,30: PRINT PAPER 3: "To verify save: rewind/play tape"
176 "If verify fails use goto 100"
177 VERIFY F$(1) DATA F$: GO TO 7035
178 VERIFY F$(1) DATA R: GO TO 7040
179 VERIFY F$(1) DATA A$: GO TO 100
180 STOP
181 CLS: PRINT AT 10,0: PAPER 2: BRIGHT 1: "ENTER DATA TITLE OR PRESS E
182 NTER"
183 INPUT F$(1)
184 LOAD " " DATA F$: LOAD " " DATA R: LOAD " " DATA A$: GO TO 100
185 INPUT "SCREEN PRINT 0 CHAR. PER LINE? ENTER 32 OR 64: "; C$
186 IF C$ <> "32" AND C$ <> "64" THEN BEEP .1,-10: GO TO 9000

```

Practical Microcomputer Applications

FOR THE PAST TWO YEARS I HAVE BEEN USING MY HOME COMPUTER SYSTEM TO HELP ME COMPLETE MY TEDIUMS CLERICAL CHORES AND HAVE ALSO USED IT FOR THE PREPARATION OF STUDENT EXAMS AND IN SCHOOL FOR SPECIFIC SCIENCE LESSONS WHERE THE STUDENTS COLLECT AND ANALYSE NUMERICAL DATA.

MY COMPUTING EXPERIENCE STARTED WITH A COURSE IN FORTH PROGRAMMING AT N.Y.U. SEVERAL YEARS AGO. WHILE I FOUND THAT LANGUAGE VERY OVERSEER AND DIFFICULT TO WORK WITH I LEARNED HOW A COMPUTER CAN BE USED TO MANIPULATE DATA. I WAS LATER EXPOSED TO MICROCOMPUTERS AND I WAS AMAZED AT THE SIMPLICITY OF PROGRAMMING AND WORKING WITH THEM. ONE OF MY FRIENDS HAD BUILT A COMPUTER SYSTEM BASED ON THE INEXPENSIVE TIKEX SIMILAR MACHINE AND I LINKED SOME OF ITS SPECIAL FEATURES. SINCE THAT TIME I'VE BEEN SLOWLY WORKING ON DEVELOPMENTS MY OWN SYSTEM WHILE USING IT FOR MANY PRACTICAL APPLICATIONS CONNECTED WITH TEACHING.

the hardware

Altacomputer-Times Sinclair 1000
 640K RAM memory
 128K ROM memory
 128K ROM memory
 128K ROM memory
 128K ROM memory

the software

Altacomputer-Times Sinclair 1000
 640K RAM memory
 128K ROM memory
 128K ROM memory
 128K ROM memory

This was prepared using WordPerfect 11.3 and the Times 2040 printer

NEWS NOTES :

Library tapes are being generated about 2 X/year. Tape #2 (The first for 1985) is due out in February. Response to tape #1 was quite good and the programs on #2 cover over 30 minutes worth of tape.

PROGRAMS

THESE PROGRAM LISTINGS ARE BEING REPRODUCED TO PERMIT OTHER TEACHERS TO USE THEIR OWN MICROCOMPUTERS AS I HAVE USED BY MACHINE. IT WOULD BE AN INFRINGEMENT OF THE AUTHOR'S RIGHTS FOR OTHER PEOPLE TO ATTEMPT TO REPRODUCE THE PROGRAMS. IN ADDITION, IF YOU MODIFY ANY OF THE PROGRAMS TO RUN ON OTHER COMPUTERS, PLEASE SEND ME A LISTING OF THE PROGRAMS.

STEVEN KAYE
 JAMES MADISON HIGH SCHOOL
 3783 BEDFORD AVENUE
 BROOKLYN NY 11229

9800 REM OUT SLIP PROGRAM
 9802 LPRINT "HR/STUDENT: "C\$(I)
 9804 LPRINT "ABSENT FROM BID 1"
 9806 LPRINT "STUDENT PHONE NO: "
 9808 LPRINT "DATE OF ABSENCE "D
 9810 LPRINT "TEACHER-HR. S. KAYE
 9812 LPRINT L\$
 9814 GOTO MENUE

CUT SLIP ROUTINE-INSERT IN FILED
 ATA 2E PROGRAM

Absence From Recitation

HR/STUDENT: 3300 IMA SAMPLE
 ABSENT FROM GEN. SCI. PD 9
 STUDENT PHONE NO. 123-4567
 DATE OF ABSENCE-DEC. 11,1984
 TEACHER-HR. S. KAYE
 DATE FILED 12/11/84

Disposition: Check and officer in charge initial.

1. Absence from school _____
 2. Change of program _____
 3. Sick pass _____
 4. Discharge or suspension _____
 5. Late to school _____
 6. Marked absent by error _____
 7. Unexcused absence _____
 8. Discharge or suspension _____
 9. _____

FOLLOW UP! _____

1 FOR U=1 TO 50
 2 LPRINT AT 0.4;
 3 NEXT U
 4 CLS
 5 REM RANDOM TEST
 6 REM BY MIKE HAAS-SOUTH SHOR
 7 H.S. PLEASE DO NOT DUPLICATE F
 8 OR COMMERCIAL PURPOSES
 9 LPRINT "H
 10 INPUT A
 11 PRINT AT 0.0;
 12 INPUT Z
 13 LET B=3+Z
 14 CLS
 15 REM 0.1(A,B)
 16 PRINT AT 0.0;
 17 INPUT A
 18 INPUT Z
 19 LET B=3+Z
 20 CLS
 21 REM 0.1(A,B)
 22 PRINT AT 0.0;
 23 INPUT A
 24 INPUT Z
 25 LET B=3+Z
 26 CLS
 27 REM 0.1(A,B)
 28 PRINT AT 0.0;
 29 INPUT A
 30 INPUT Z
 31 LET B=3+Z
 32 CLS
 33 REM 0.1(A,B)
 34 PRINT AT 0.0;
 35 INPUT A
 36 INPUT Z
 37 LET B=3+Z
 38 CLS
 39 REM 0.1(A,B)
 40 PRINT AT 0.0;
 41 INPUT A
 42 INPUT Z
 43 LET B=3+Z
 44 CLS
 45 REM 0.1(A,B)
 46 PRINT AT 0.0;
 47 INPUT A
 48 INPUT Z
 49 LET B=3+Z
 50 CLS
 51 REM 0.1(A,B)
 52 PRINT AT 0.0;
 53 INPUT A
 54 INPUT Z
 55 LET B=3+Z
 56 CLS
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 853 LET B=3+Z
 854 CLS
 855 REM 0.1(A,B)
 856 PRINT AT 0.0;
 857 INPUT A

HEADER READER-TS1000

This program lets you scan the name you have given to your TS1000 programs. It is adapted from "Explorers Guide to the ZX81 and TS1000" by Mike Lord. This vastyly underrated book is probably the most valuable addition to your TS1000 library. This unique book contains both hardware and software articles, that are not published anywhere else. Explorers' guide does not fit the category of a "me too" book. The descriptions of the ZX-81 display hardware/software is of such detailed nature that it is my guess that Mr. Lord either worked for Sinclair or had some contacts there. Buy it before it goes out of print.

I have included a minimal loader program to enter the 66 byte code into the ram statement.

First create a ram statement with 66 or more spaces. Then enter enter lines 10 through 200 of listing 1. Enter the code from left to right. When you are done and suuheck is verified to be 7520, delete lines 10 through 200.

Enter lines 20 through 110 of Listing 2. This is the program you will save and use. The program will auto run after a save and prompt you to load your tape. It will then print on the screen the title it finds.

CEM BAKUT

```

LISTING 1
1 REM 12345678901234567890123
2 678901234567890123456789012345
3 10 FOR I=16514 TO 16579
4 20 INPUT A
5 30 POKE I,A
6 40 SCROLL
7 50 PRINT I;" "
8 60 NEXT I
9 65 SCROLL
10 70 PRINT "DONE"
11 100 REM SUHCHECK SHOULD BE *752
12 0
13 120 PRINT "PRESS A KEY TO BEGIN
14 SUHCHECK"
15 130 IF INKEY$="" THEN GOTO 130
16 140 LET SUM=0
17 150 FOR I=16514 TO 16579
18 160 LET SUM=SUM+PEEK I
19 170 LET SUM=SUM+2
20 180 NEXT I
21 190 SLOW
22 200 PRINT SUM

```

| | | | | | |
|-----|-----|-----|-----|-----|-----|
| 205 | 35 | 15 | 205 | 138 | 64 |
| 24 | 251 | 14 | 1 | 6 | 0 |
| 52 | 127 | 219 | 254 | 31 | 23 |
| 23 | 56 | 16 | 16 | 245 | 241 |
| 205 | 138 | 64 | 121 | 215 | 203 |
| 121 | 40 | 247 | 205 | 43 | 15 |
| 201 | 213 | 30 | 148 | 6 | 26 |
| 29 | 219 | 254 | 23 | 203 | 123 |
| 123 | 56 | 245 | 16 | 245 | 209 |
| 32 | 4 | 254 | 66 | 43 | 206 |
| 63 | 203 | 17 | 48 | 201 | 201 |

LISTING 2

```

1 REM LN 77LN BRND/CLS
2 RETURN 34510 PRINT LET LN
3 PHOTNOT ACS 70 RUN LN P70AN STR$
4 50.1 RETURN ACS 705 PRINT
5 PRINT SGN 4 RETURN 2KEXP ZACS
6 ATAN TAN
7 20 RAND USP 16514
8 30 PRINT AT 20.0 "PRESS A KEY
9 TO READ TAPE"
10 40 IF INKEY$="" THEN GOTO 40
11 50 CLS
12 60 GOTO 20
13 100 SAVE "H.READER"
14 110 GOTO 30

```

| HEXCODE | NAME | MNEMONIC |
|---------|--------|-----------|
| 4002 | CD30P | CALL 0F23 |
| 4003 | CD0A40 | CALL 400A |
| 4004 | 151F | LD 001 |
| 4005 | 0E01 | LD 000 |
| 4006 | 0609 | LD A,7F |
| 4007 | DE7F | LD A,(FE) |
| 4008 | 1F | RR |
| 4009 | 17 | RL |
| 400A | 1610 | RL |
| 400B | 10F5 | LD 000 |
| 400C | 11 | LD 00A |
| 400D | CD0A40 | CALL 400A |
| 400E | 79 | LD 00C |
| 400F | D7 | LD 00H |
| 4010 | C879 | LD 00C |
| 4011 | 28F7 | LD 00A |
| 4012 | CD200F | CALL 0F2B |
| 4013 | C9 | LD 00E |
| 4014 | D5 | LD 00E |
| 4015 | 1E94 | LD 00A |
| 4016 | 061A | LD 00A |
| 4017 | 10 | LD 00A |
| 4018 | D0FE | LD 00A |
| 4019 | 17 | LD 00A |
| 401A | C87B | LD 00A |
| 401B | 70 | LD 00A |
| 401C | 38F5 | LD 00A |
| 401D | 10F5 | LD 00A |
| 401E | 01 | LD 00A |
| 401F | 2004 | LD 00A |
| 4020 | F50 | LD 00A |
| 4021 | 30DE | LD 00A |
| 4022 | 3F | LD 00A |
| 4023 | CB11 | LD 00A |
| 4024 | 30C9 | LD 00A |
| 4025 | C9 | LD 00A |

LIBRARY TAPE DOCUMENTATION STILL NEEDED: We still need someone to write up detailed operating instructions for the tapes. Contact Chuck R.

REVIEWING NEEDED

We have some software packages which need user reviews. If you are interested in investment, money management programs, or a 2068 compiler, and will write a review, please contact Paul D.

Also needing reviews for TS 1000: - a Database, info retrieval package. For Spectrum: - Various Games

from the Mile High TSUG

RALPH SMITH ALSO INDICATED A NEED FOR A CAD PROGRAM FOR 2068. DOES ONE ALREADY EXIST? HE HAD A LONG MEETING LAST MONTH DUE TO ALL OF THE H/W AND S/W AS WELL AS THE NEWSLETTER THAT HE NEEDED TO COVER. THERE IS STILL EFFORT OUT THERE FOR US OUT THERE. HEINZ WAS ASKED IF HE WOULD TAKE NOTES ON OUR MEETINGS AND HE AGREED. WOULD YOU BELIEVE HE SENT ME 3 TYPED SHEETS BEFORE HE LEFT FOR CHICAGO? THANK YOU, HEINZ. WE WILL TRY TO FINISH UP BY 9:30 PM IN THE FUTURE.

Ralph - Check with Zebra Systems.

LIST GROUP

SPECTRUM COMPUTING - ISSUE 10
NOV/DEC © APS LTD 11111000000
1 GOLDEN SQUARE LONDON W1R 3AB
TEL: 01-437 0626
EDITOR IOLO DAVIDSON

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| Rescue Mission | "chopper" |
| Software Reviews | "reviews1" |
| Wizard Prang's | "twiddler" |

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| Cartoon | "cartoon2" |
| Wheeled Photons | "lightbike" |
| Hacker's | "hangout" |

SOFTWARE? REVIEW:

ITEM: SPECTRUM COMPUTING MAGAZINE
FOR: SPECTRUM OR TS 2068 WITH ROM OR EMU
PRICE: £3.99
FROM: APS LTD, 1 GOLDEN SQ, LONDON W1R3AB

Spectrum Computing is a "magazine" in tape format, similar in some ways to 16/48 magazine. After loading a cute, but somewhat busy little screen, the index (shown above) is listed. The programs are chained; that is, each one loads the next automatically when finished, but can be loaded separately if loaded by name.

The first article is an editorial piece about the new "fastloading" software for the Spectrum. The editor states that many new releases include a short loader program which is usually a speeded-up version of the standard Spectrum tape LOAD routine. This cuts loading time significantly (say from 4 min. down to 2), but because of the higher Baud rate and consequent higher frequencies, often leads to LOADING errors or crashes. In his opinion, the "fastload" routines are merely an effort to defeat tape-to-tape copiers and end up making even the originals hard to load. He asks the software houses to cease and desist.

Next comes "Chopper", a pretty much standard "Choplifter" (Defender) type game program. You fly a rescue chopper into oncoming balloons and jet planes, in an attempt to pick up stranded "survivors". The graphics are adequate and response is reasonably good. The singular variation from the standard game is your lack of guns. To give you a frame of reference, I'd say that if Penetrator was worth \$10.00 (in the UK) this game would be worth about \$4, commercially. As a program published in a magazine though, it is not bad, at all.

A series of software reviews follow "Chopper", these cover arcade or adventure games exclusively and seem to illustrate Spectrum Computing's overall style. The reviews are irreverent, perhaps even acerbic at times, and of course, cover only "lightweight" or game software. Compared to 16/48, Spectrum Computing is a bit of a "lightweight" publication, as well. The programs reviewed in the first section include the Inferno, Full Throttle, Battle Zone, PYJAMA and Zombie. Each has two pages of text and offers one actual graphics screen from the reviewed program.

To give you an idea of the reviewers style, I'll try to provide a review of this review of Inferno; written in his own style:

"It's hard to believe this reviewer is serious. He claims "the Inferno" is probably a lot like "the Hobbit", and should be a big hit with adventure fans".

Is he kidding? He admits he's never seen the Hobbit! And he's still trying to make a comparison. Give us strength!

On top of all that, the actual program used for all 5 reviews is written in pissant BASIC. That's that peculiar U.K. version of memory - saving code which makes listings almost incomprehensible to all but the most experienced programmer. Stuff like PRINT LINE (PI*VAL"X") are ridiculous, and probably not necessary as well. A line like the one I just made up probably saves only a couple of bytes of code, anyhow".

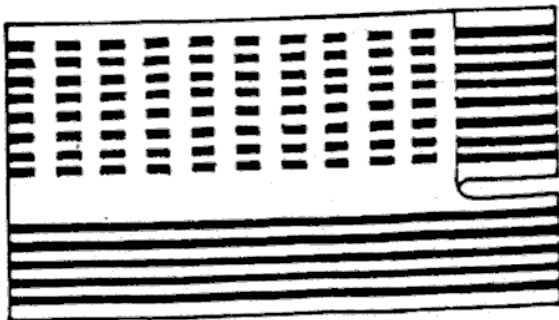
Don't get me wrong. The reviews are not bad, just not good. The last item in the section of the magazine is perhaps an even better indicator of that "lightweight" stigma I applied earlier. PRANG'S TWIDDLER is purported to be an attribute twiddling utility. It does twiddle the attributes in some cutesy ways, but I defy any novice programmer to use it. The programs internal documentation, in a few REM statements, is abysmal.

The second section of S.C. is pretty much, "more of the same", though the "Cartoon" is pleasant to watch. To sum up, there is good value for money here, just not as much as there is in "16/48". The best comparison I can make, is to liken 16/48 to "Your Computer" or "ZX Computing" (lately) while Spectrum Computing is more like "Sinclair Programs" or perhaps "Sinclair User".

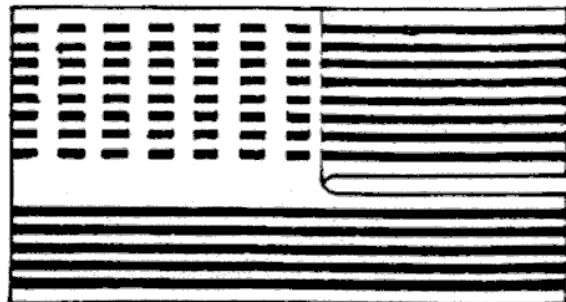
Technical Report:

Flexible Plastic Connections from Keyboard

Yes, this illustration was missing from last month's issue!



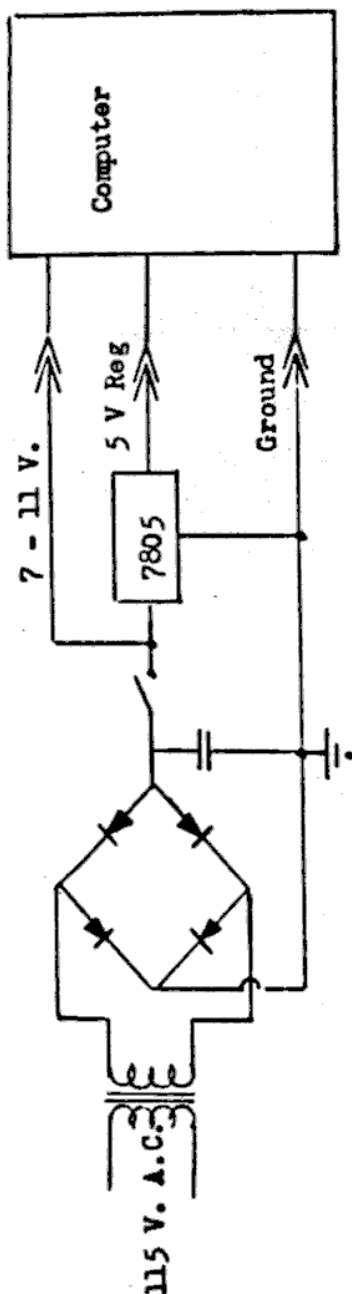
Original



Modified

2-41
LIST GROUP

Modified Power Supply Schematic Diagram - with 7805 external to Computer



Here's our third installment from Jess Peeler.

Power Supplies - Problems

1. Once in a great while, you get a noisy power supply. In such cases, the bridge rectifier is first suspect. (A power supply can still partially function with 1 or 2 diodes bad - but it will be noisy!) You must crack open the power supply case and find the faulty diode(s) and replace them with 1N4002 diodes. I've never seen a capacitor fail, but it could and the replacement is a 1000 mfd/16V capacitor.
2. I recommend cracking open the power supply whether there is a problem or not. I then put a miniature SPST switch in series with the output so that I can kill power at the power supply, rather than pulling the plug at the computer.
3. To avoid drop-outs due to looseness of the power supply plug, I remove the power jack completely. (Desolder it and remove.) I then hard-wire the power wires in place, tack them securely with some silicone rubber and the power drop-out problem is completely solved. For an even neater job, one should consider putting a small male and female connector near the power supply to disconnect the system. Watch that you don't reverse polarity!
4. Where I live, heat is not a problem. However, based upon the vast amount of letters and complaints seen in Sync and Syntax, heat is a problem for many and the logical solution - the only one I've not seen presented - is to get the primary heat generator outside of the computer case, like so:
 - a. The primary heat generator is the 7805 3-terminal 5 Volt regulator. The higher the input voltage applied to this device, the more energy which must be dissipated in heat by this device to reduce the output voltage to +5 volts.
 - b. The input voltage (From the external power supply) varies from a high of 11+ volts down to 7 volts. The variation comes about primarily due to the amount of add-ons which are connected to the computer. Each device added pulls more current - which causes voltage to drop. (Should you add too many external items, say with a 750 ma. power supply, the response would be too high a current drain, voltage would drop too low, and the computer would just quit functioning.)
 - c. De-solder the 7805 regulator and remove it - also the aluminum heat sink. Now, combining with (3., above) connect a 3-wire input to the computer. Three wires are now needed because not only do we need a +5 volt and ground (return) line, but we need the un-regulated line which provides between 7 and 11 volts - for use by the external 16K RAM. (See figure A) Page 4
 - d. Mount the 7805 regulator - with a good heat sink - to the external power supply. Use silicone rubber to seal the heat-sinked 7805. Now rig 3 lines via a 3 wire plug and jack to provide variable D.C. (7 - 11 volts), regulated +5 VDC and ground. Don't forget to put a SPST miniature switch on the external power supply.

SIMPLE T/S 2068 OUT PORT (Part 2)

As stated in part 1, the outputs of the Port or latch can drive LEDs directly however, it would be preferred to isolate the output circuitry using optoisolators. Refer to diagrams.

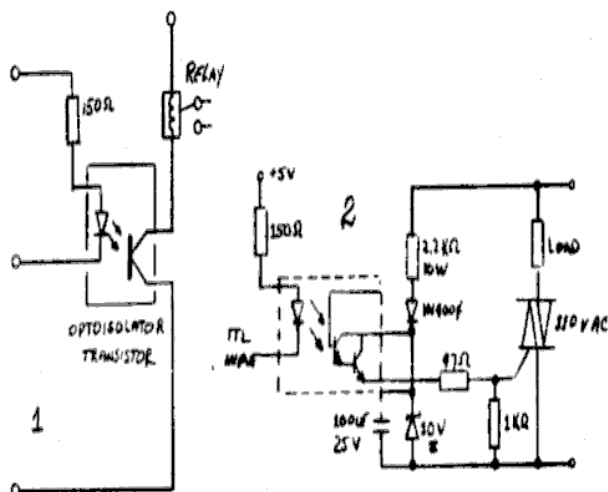
- 1- An optotransistor with a Darlington pair and an LED can be used to drive a relay directly.
- 2- An optothyristor can be used for controlling half wave AC line circuits such as, lights, pumps, valves and motors.
- 3- Optodiode/Optotriac devices can be used to drive simple AC line circuits directly or with an additional Triac for heavier AC line applications.

The Port circuit can be connected to eight (8) opto devices since there is adequate power from the 5 volt computer power supply. External circuits driven from opto devices should contain their own power supply to prevent overloading the computer.

An alternative device which can be used safely as an interface between the computer, Out Port and external low-voltage DC circuitry is the V-FET or VMOS transistor. This is a high current Field Effect transistor (FET) that acts very well as a high current switch to operate DC motors such as in a train set control application or perhaps in Robotics and motors or servos. Thyristors and Triacs are AC devices which do not switch off under DC conditions, whereas the V-FET will switch on and off like a relay with the load being connected in the Drain or Source circuits in series with the transistor. A V-FET which can switch up to 2 amps is the UN 46AF. This V-FET can use DC voltages up to 40V and is rated at 15 Watts.

The Out Port can be constructed using the PC board available from MAPLIN ELECTRONICS LTD; ENGLAND or from a section of multi-purpose perf board (ZEBRA) using point-to-point wiring or wire wrap techniques.

The relay board or opto drive board should be separate from the Port board since they will probably drive some sort of 110V AC devices. Double check all 110V connections for adequate insulation and/or shorts between the output circuitry.



Diagrams: 1-Optoisolator (Transistor), 2-Opto-Darlington pair

TESTING

Without the Port connected to the computer and with out any power present, check all connections with an ohmmeter or continuity tester for shorts or open connections. If everything is OK, connect the Out Port to the computer and apply power. The computer should display the normal copywrite message at the bottom of your monitor screen - if not, shut off the computer immediately and recheck all wiring. If all is well, a voltmeter check from each latch output should read a logical 0; almost 0V.

Type in: OUT 31,255, then ENTER. All outputs should go high (logic 1), about 5 volts DC. Any relays connected to outputs will energize and opto devices will drive their respective loads.

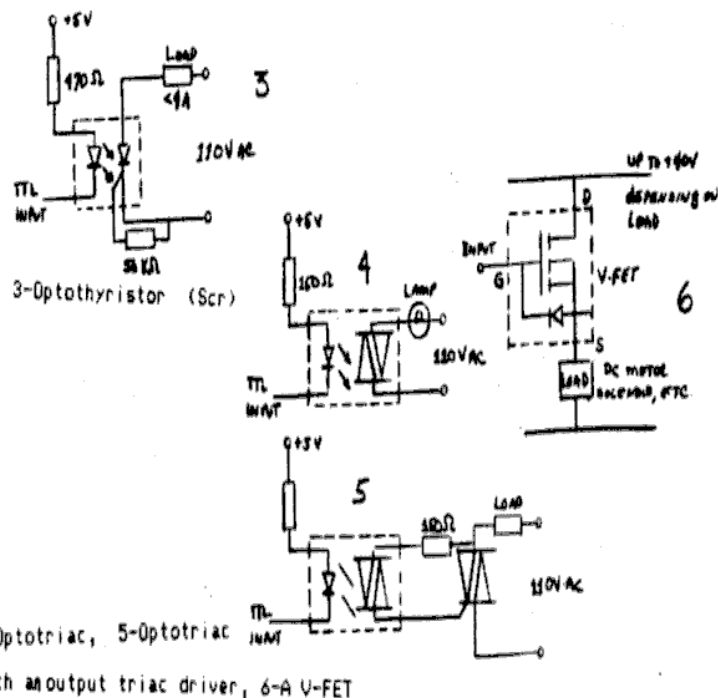
To call each port (latch), use the following:

OUT 31,1.....Latch 1
OUT 31,2.....Latch 2
OUT 31,4.....Latch 3
OUT 31,8.....Latch 4
OUT 31,16.....Latch 5
OUT 31,32.....Latch 6
OUT 31,64.....Latch 7
OUT 31,128.....Latch 8

If a combination of two or more Ports are required, use BINARY for the required number to activate multiple devices:

OUT 31,3.....Latch 1 & 2
OUT 31,255.....Latch 1 thru 8
OUT 31,7.....Latch 1, 2, & 4
and so on.....

.....Bob Gilder



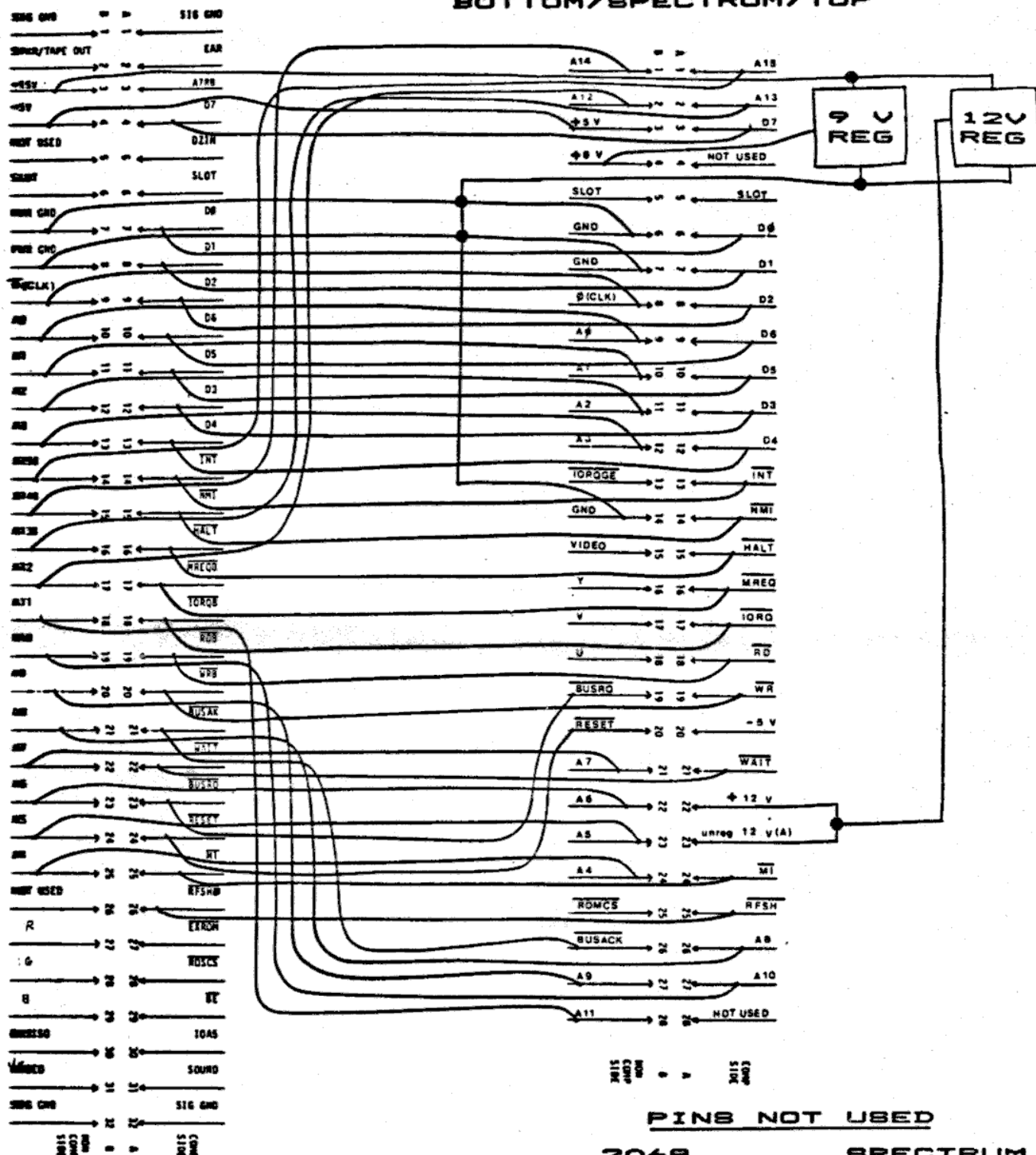
4-Optotriac, 5-Optotriac
with an output triac driver, 6-A V-FET

LIST GROUP

TS 2068 / SPECTRUM MICRODRIVE INTERFACE EDGE CONNECTOR SIGNAL ALLOCATION

BOTTOM/TS 2068/TOP

BOTTOM/SPECTRUM/TOP



NOTES:

1. This modification will only work with EMU-1, EMU-2, or the new OMNI-EMU (with EMULATOR EPROM) installed in dock cartridge port. ROMs and ROM-based systems need additional circuitry on the interface and inside the 2068.
2. This interface circuit is compliments of Roy B. Perschy, 110 The Village # 503, Redondo Beach, CA 90277 (213)376-2740
3. It might be wise to use some bypass capacitors around the 9 volt and 12 volt regulators.
4. Contact either Roy or Doug Dewey about the availability of this interface--both are working on one, as is Zebra Systems,

2068

SPECTRUM

1 A&B
2 A&B
3 A&B
4 A
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9 B
10 B
11 B
12 B
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100 B

LIST GROUP

LIST GROUP

RGB MONITOR

We've all heard that RGB monitors provide a much better display than that which our 2068's put out on Channel 3 or monitor output. Having just purchased Sears RGB monitor/reciever, I can testify that the difference is breathtaking.

I used Timex's sync stripper circuit, mounted on a Radio Shack project board, to make sure the sync levels to the Sears Monitor were up to snuff. Bob G. feels I could have tried to send the composite video directly to the composite sync input and gotten good results. Theoretically, that won't work because the sync circuits on the monitor are "supposed to be" looking for 5 volt (TTL) level signals and composite video is usually only in the 1 volt range (a 0 signal to TTL). It works on Bob's Hamtalex monitor, because the circuits sensitivity can detect the "black" sync signals. The Sears may be sensitive enough, as well, and you may want to try it. I had already built the board into my cable, so I used it.

You can make the cable yourself, as I did, or buy a commercial "IBM PC" cable. These latter sell for from \$10 to \$20, depending on source. Follow Bob's instructions for Internal RGB output using a 9 pin 'D' connector on the back of your 2068 (see back issue of LISTing). Your best bet is to follow IBM's "standard" pinout on the computer connection as this will allow the use of the standard cable. It cost me more to "roll my own" than I could have paid for a commercial cable (Delivery was the main problem), and mine is not IBM compatible as I didn't know their pinout for the 9 pin plug.

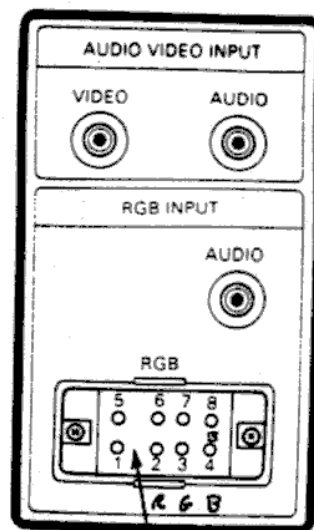
The accompanying illustrations on this page give the pinouts for the monitor, the Timex sync circuit and other helpful info.

Phil McConaghey wrote in to tell us how he hooked his monitor up using Brown's RGB adapter. His note is provided below.

The young arcade aces around here used to think Jet Set Willy was one of the best arcade adventure games around. Now that they've seen it in RGB (the brightness artifacts are gone, as well as all the "wiggles"), they would play it all day - every day, if we let them. About the only disappointment is the "phony" 64 column mode programs. Those 3 dot wide characters look worse, now that I can really see how they're done.

I highly recommend the Sears monitor receivers, especially at the \$319.00 price.

@ Copyright 1984, P. Donnelly



RGB INPUT SIGNAL CONFIGURATION

PIN CONNECTION TABLE

| | |
|-------|---|
| PIN 1 | Intensity Input |
| PIN 2 | Red Input |
| PIN 3 | Green Input |
| PIN 4 | Blue Input |
| PIN 5 | Ground |
| PIN 6 | Ground |
| PIN 7 | Vert/ Horiz Composite or Horiz Sync Input |
| PIN 8 | Vert Sync Input |

MONITOR FOR TIMEX 2068

BY PHIL MCCONAGHEY

I purchased Model No. 4084 from Sears, Roebuck & Co. (\$364.00 including tax) together with RGB Cable Model 6539 (\$18.00). After modifying my computer using an RGB Conversion kit #220-453 from E. Arthur Brown Co., 1702 Oak Knoll Drive, Alexandria, VA 22308 (\$19.95). This requires opening the computer and doing some soldering inside. Then I connected the wiring as follows:

CONVERSION KIT CABLE

Brown
Red
Orange
Green & Yellow
White
Black
+ 5 volts*

RGB SEARS CABLE

Orange
Red
Brown
Bare wire
Green
Blue
Yellow

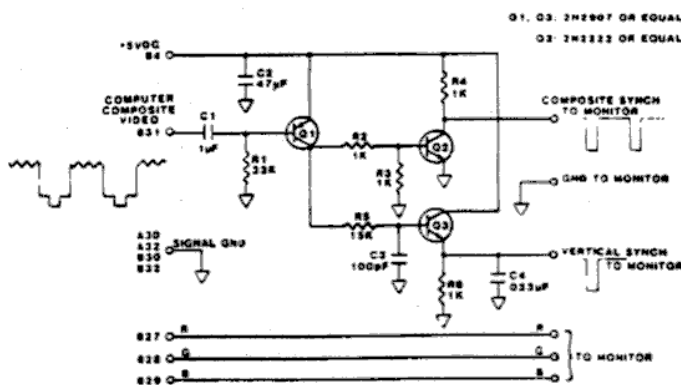
*Run a separate wire (not included) connected to the +5 volts location shown in the instructions for the RGB Conversion Kit.

Try out the new system by entering BORDER 6. If the edges of the display have the wiggles or the screen goes blank, open the computer and adjust the Horizontal by turning the "VRI" located in the bottom left side and/or the "CS" which is at the middle upper right part of the Board.

I now have fantastic clearness and color. I noticed Sears has this monitor on sale recently for \$319.00.



Save \$30 on Sears exclusive color TV/monitor.
Accepts RGB, TV and Audio Video. Plus you get all-green display at the flick of a switch! NOW \$319.99.



SCHEMATIC FOR RGB MONITOR CONNECTION

"CURVE" AND "CURVE" ARE BOTH THE SAME BUT THE FIRST IS A GREATLY ENHANCED VERSION WITH 3 MENUS & SOME M.C. INCLUDED. WHAT THEY BOTH DO IS TAKE A BUNCH OF STRAIGHT LINES (I CALL THIS THE FRAME) AND PUT IT THROUGH BEZIER'S FRENCH CURVE FORMULA TO ROUND OUT THE EDGES.

THIS WAS ORIGINALLY A PROGRAM FOR THE APPLE II COMPUTER BUT I'VE TRANSLATED IT TO 2000, ALTERED ITS FUNCTIONS, WRITTEN NEW ROUTINES, AND SPEEDED IT UP SO NOW IT HAS LITTLE IN COMMON WITH ITS ANCESTRY. IT IS A GREAT PROGRAM TO PLAY AROUND WITH. YOU CAN SPEND HOURS & HOURS GOING AROUND WITH IT.

"CURVE" IS SHORTER AND WILL GIVE YOU A FEEL FOR CURVE PLOTTING WITHOUT LOTS OF TYING. BUT "CURVE" LETS YOU STORE, ALTER & SUPERIMPOSE AND IS HANDIER FOR FOCUSING AROUND WITH THE ARTISTIC TALENT LATENT IN US ALL.

I'LL PROVIDE A BREAK-DOWN OF THE MENU FUNCTIONS AND A FEW HINTS & TIPS. THEN THE PROGRAM WILL SPEAK FOR ITSELF.

FOR LOWER "CURVE" PROGRAM

OPENING MENU:

CLS - CLEARS SCREEN
COPY - COPIES PICTURE TO PRINTER (2000)
CONTINUE - GOES ON TO MAIN MENU (MM)

MAIN MENU:

begin - STARTS INPUT SEQUENCE TO START NEW DRAWING (line 100)
alter - SENDS YOU TO ALTERATION MENU (line 200)
store - M.C. SENDS SCREEN TO HIGH MEMORY LOCATION (line 300)
quit - STOPS PROGRAM AT LINE 400

ALTERATION MENU:

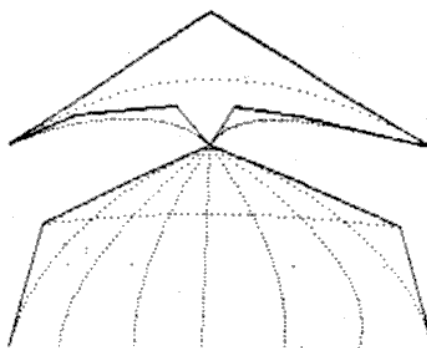
list - LISTS BY CORNER ALL (X,Y) COORDINATES OF LAST DRAWING
fix - LETS YOU ALTER ANY OR ALL COORDINATES OF LAST DRAWING
old - DISPLAYS WHAT IS IN HIGH MEMORY STORAGE WITH M.C.
both - AS WITH OLD BUT THEN SUPERIMPOSES LATEST DRAWING
MM - TAKES YOU BACK TO MAIN MENU (LINE 20)

HINTS & TIPS: (MOSTLY FOR LOWER VERSION)

1. THE VALUE OF "a" IN LINE 10 CAN BE CHANGED HIGHER FOR MORE POINTS PER INCH ON EACH CURVE OR LOWER FOR LESS PER INCH. THE LOWER, THE FASTER THE ROUTING. THE GOOD FOR BOTH VERSIONS.
2. FEEL FREE TO CHANGE INK COLORS IN LINES 40, 240, 300, 320 AS YOU LIKE, AS WELL AS BORDER & PAPER.
3. IF YOU QUIT ACCIDENTALLY JUST LET GO TO 40 AND NOTHING IS LOST.
4. IN SHORTER "curve" PROGRAM A GOTO 100 WILL LET YOU PLOT AGAIN AND AGAIN WITHOUT LOSING YOUR SCREEN.
5. YOU MAY CONNECT THE BEGINNING & END POINTS IF YOU MAKE THEM THE SAME COORDINATES. A BLANK SHEET OF PAPER COULD HELP HERE.
6. YOU ARE ABLE TO HAVE LINES CROSS AS WELL BUT MORE THAT ONE CROSS CAN GIVE UNUSUAL SCREEN RESULTS.
7. LINES 510 TO 640 IN BOTH VERSIONS CONTAIN THE BEZIER FORMULA. A PERSON MORE VERSED IN MATH MIGHT BE ABLE TO REWRITE THIS FOR SPEED.
8. THE COMMENTS OF THIS 1 REM START OUT AS 25 "X'S". THEN (AS SHOWN BY ADDRESSES) EACH VALUE IS POKED IN THEIR PLACE. THERE ARE 24 VALUES AND 25 "X'S" - WHY? I ALWAYS AM MAKING MISTAKES; THIS IS JUST A PRECAUTION IN CASE I MISS!
9. CAN ANYONE ADD A SUPERIOR SINE FUNCTION? RIGHT NOW STORAGE CORNERS AT 57167 AND IS 6143 BYTES LONG. PAPER IS SET JUST BELOW THIS BY LINE 10.

I HOPE EVERYONE OF YOU HAS AS MUCH FUN WITH THIS AS I HAVE.

— Paul (Bingham)

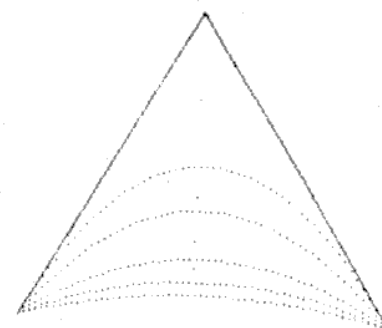


CURVE program:

```

1 REM ? COPY BORDER 170 GO 5
US VAL <>? COPY 01? BORDER GO 5
US VAL <>X
10 LET a=50: DIM x(20): DIM y(
20): DIM b(20): DIM c(100): DIM
d(100): POKE 23730,30: POKE 2373
1,231: GO TO 40
20 INPUT "1)cls 2)copy 3)conti
nue": IF t=1 THEN CLS
30 IF t=2 THEN COPY
40 INK 0: INPUT "1)begin 2)alt
er 3)store 4)quit": f
50 GO TO (f+100)
100 INPUT "total number of corn
ers: "g
110 IF g>20 THEN INPUT "MUST be
<20...try again: "g: GO TO 110
120 LET n=g-1: INPUT "first coo
rdinates: x="x": y="y: GO SUB
750
130 FOR i=1 TO n+1
140 LET x(i)=x: LET y(i)=y
150 PLOT x,y: IF i=n+1 THEN GO
TO 180
160 INPUT "next coordinates: x=
": y="y: GO SUB 750
170 GO SUB 750
180 NEXT i
190 GO SUB 510: GO TO 20
200 INPUT "1)list 2)fix 3)old 4
)both 5)MM": n
210 IF h=5 THEN GO TO 20
220 GO TO (200+h*30)
230 CLS: PRINT "corner: (x)
(y)"
240 FOR i=1 TO n+1: PRINT "
1) "TAB 10; x(i); TAB 17; y(i)
250 NEXT i: GO TO 200
260 INPUT "alter corner ___? (0
if done)": i
270 IF i=0 THEN GO SUB 500: GO
TO 200
280 INPUT "new coordinates: x="
x(i): y="y(i): GO TO 260
290 INK 7: PLOT 175,USR 26727:
INK 0: GO TO 200
300 INK 7: PLOT 175,USR 26715:
INK 0: GO TO 200
320 INK 7: PLOT 175,USR 26727:
INK 0: GO SUB 550: GO TO 20
400 STOP
500 CLS
510 LET c(1)=x(1): LET d(1)=y(1
)
530 FOR e=2 TO a-1
540 LET j=((e-1)/(a-1)): LET b(
1)=(1-j)+n
550 FOR i=1 TO n
560 LET b(i+1)=(g-i)/i+j/(1-j)+
b(i)
570 NEXT i
580 LET c(e)=0: LET d(e)=0
590 FOR i=1 TO n+1
600 LET c(e)=c(e)+b(i)*x(i)
610 LET d(e)=d(e)+b(i)*y(i)
620 NEXT i
630 NEXT e
640 LET c(a)=x(g): LET d(a)=y(g
)
550 INPUT "C)curve only F)frame
& curve": z
660 IF z="c" THEN GO TO 710
670 FOR i=1 TO n
680 PLOT x(i),y(i)
690 DRAW x(i+1)-x(i),y(i+1)-y(i
)
700 NEXT i
710 FOR e=2 TO a-1
720 PLOT c(e),d(e)
730 NEXT e
740 RETURN
750 IF x<=255 AND x>=0 AND y<=1
75 AND y>=0 THEN RETURN
760 INPUT "HEY!...x<255,y<176!
x="x": y="y: GO TO 750

```



```

1 REM
CURVE
curve program
10 LET a=50: DIM x(20): DIM y(
20): DIM b(20): DIM c(120): DIM
d(120):
100 INPUT "total number of corn
ers: "g
110 LET n=g-1
120 INPUT "first coordinates: x
="x": y="y:
130 FOR i=1 TO n+1
140 LET x(i)=x: LET y(i)=y
150 PLOT x,y: IF i=n+1 THEN GO
TO 180
160 INPUT "next coordinates: x=
": y="y:
170 GO SUB 510
400 STOP
510 LET c(1)=x(1): LET d(1)=y(1
)
530 FOR e=2 TO a-1
540 LET j=((e-1)/(a-1)): LET b(
1)=(1-j)+n
550 FOR i=1 TO n
560 LET b(i+1)=(g-i)/i+j/(1-j)+
b(i)
570 NEXT i
580 LET c(e)=0: LET d(e)=0
590 FOR i=1 TO n+1
600 LET c(e)=c(e)+b(i)*x(i)
610 LET d(e)=d(e)+b(i)*y(i)
620 NEXT i
630 NEXT e
640 LET c(a)=x(g): LET d(a)=y(g
)
550 INPUT "C)curve only F)frame
& curve": z
660 IF z="c" THEN GO TO 710
670 FOR i=1 TO n
680 PLOT x(i),y(i)
690 DRAW x(i+1)-x(i),y(i+1)-y(i
)
700 NEXT i
710 FOR e=2 TO a-1
720 PLOT c(e),d(e)
730 NEXT e
740 RETURN

```

1 REM contents:

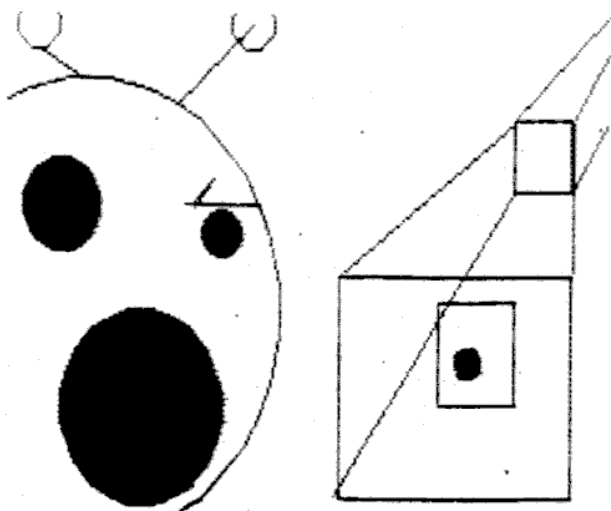
```

xx 1 REM xxxxxxxxxxxxxxxxxxxxxxxx
26715 1
26716 255
26717 23
26718 17
26719 31
26720 331
26721 33
26722 9
26723 54
26724 237
26725 175
26726 181
26727 1
26728 255
26729 331
26730 17
26731 9
26732 54
26733 331
26734 331
26735 237
26736 175
26737 181
26738 201

```

LIST GROUP

graphics



These graphics were produced using "Draw", which is on Library tape #2.

Shade Copy

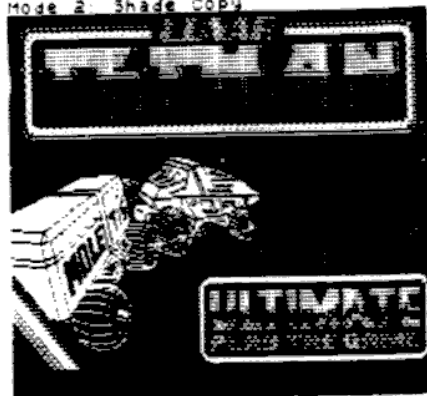
I J Abbott,
Doncaster,
South Yorkshire.

SPECTRUM

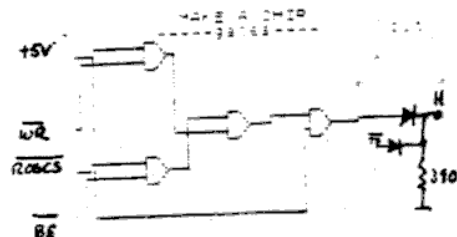
Mode 3: Normal



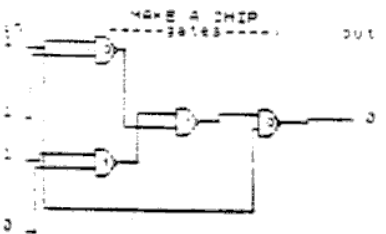
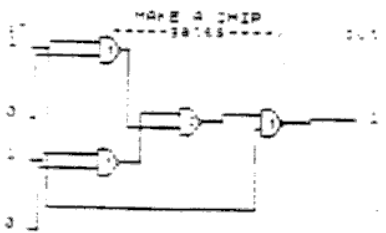
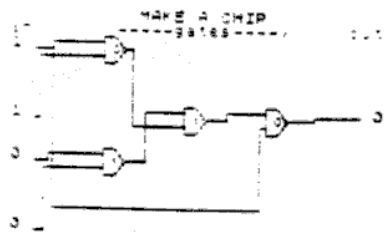
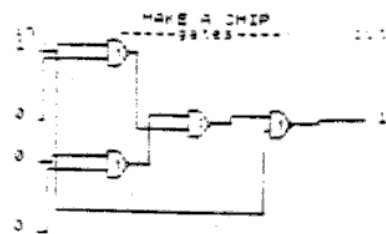
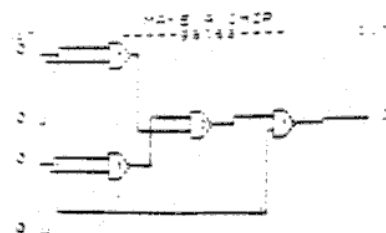
Mode 2: Shade Copy



| JANUARY 1986 | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|
| SUN | MON | TUE | WED | THU | FRI | SAT |
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |



USE
IN
AND
NO



TEST GROUP

MAKE-A-CHIP - Is an excellent educational package which lets you design and test logic circuits. You may recognize the circuit from your TS 2068 schematic. (FOR SPECTRUM)

COMMUNICATIONS

FROM ZX/TS FORUM (THROUGH MARTY J.)

Yes you can open/close your friends buffer and even ring his bell!

All you got to do is:

- 1: PRESS SYMBL SHIFT and CAPS SHIFT together
- 2: HOLD THE TWO SHIFTS DOWN and press:

R: to open his buffer
T: to close his buffer
G: to ring his bell

One more thing, when your computer asks you for "PROMPT STRING?" or "CHARACTER DELAY?" Just hit the ENTER key. This is simpler way to send a program.

Tasword II

This is Tasword II, in the 64 column mode. I think it looks pretty good on my Sears RGB monitor. So far, I can type in these comments about as fast as I like, while using the standard "Sinclair" editing procedures, as I go along. That's a good feature, I think, for those of us who've grown up on these techniques.

I haven't looked up at the results yet, as I want to see if we get "free" word-wrap. When I do, I'll probably fix my mistakes, anyway. I think, for example, that I put in commas for apostrophe's (I did, and I'm using the insert function (the HND key) to tell you about it now) in the first paragraph. I'm going back now to try to fix this up. Let's see if I can do it without the manual.

New para. Well, I'm impressed. Not only did I get word-wrap, my text is justified. I'm beginning to see why this package is the rave in the U.K., and why Sinclair Research provided it as part of my microdrive package.

Next para. Time to try the EDIT mode. The HELP menu, reached by entering EDIT, as shown in the command line at the bottom of the page, has given me all the commands I needed to fix up the mistakes I made in the first paragraph, and, to insert the double parenthetical expression in the second, which tells you that I succeeded.

I'm TABing manually, but let's see if there's an auto TAB function... Well, You can't have everything. Of course, with auto repeat on the space bar, that's not really a big problem.

There are some other nice word processor features which TWII lacks, but they are fairly sophisticated, infrequently used, and found only on the most expensive WP's. Tasword II will satisfy my needs, and those of most users and moderate intensity writers, like myself, at a very reasonable price (the Spectrum version is available for as little as \$12.00 if you know where to look). TWII gets a "10", perhaps the first I've ever given, both because it is cost effective and is simple enough to use without a manual, for almost anyone who's used even the simplest word processor before.

Copyright 1984
Paul J. Donnelly

basicode-2

ektor october 1984

Changes and additions to broadcasting schedules

In our October, 1983, issue we published two articles on 'basicode-2' (pp. 10-27 and 10-51). In the first of these we mentioned that basicode programmes are broadcast during the Hobbyscoop programme. As from 7 October the broadcast times on medium waves change to 19.10 - 19.15 (British time) on Hilversum 5, 1008 kHz, every Friday. The main programme, which is no longer transmitted on medium waves, can now be heard on Thursdays, commencing 26 October 1984, according to the following schedule (all times in GMT).

| | | | | | |
|--------------------------|-------|------------|-------------------------|-------|------------|
| Australia/New Zealand | 07.50 | 9770 kHz | Western Europe (cont'd) | 15.50 | 5955 kHz |
| | 10.50 | 9715 kHz | | | 6020 kHz |
| South East Asia | 14.50 | 9650 kHz | | | 9895 kHz |
| | | 11 735 kHz | | | 11 935 kHz |
| | | 17 605 kHz | | | 17 605 kHz |
| Africa & Southern Europe | 18.50 | 21 480 kHz | | 18.50 | 6020 kHz |
| | 20.50 | 9540 kHz | | | 9540 kHz |
| | | 9540 kHz | | | |
| | | 11 730 kHz | | | 6165 kHz |
| | | 11 740 kHz | | | 9890 kHz |
| | | 15 560 kHz | Eastern North America | 02.50 | 9895 kHz |
| | | 17 605 kHz | | | 9895 kHz |
| | | | | | |
| Western Europe | 09.50 | 5955 kHz | Western North America | 05.50 | 6165 kHz |
| | | 6045 kHz | | | 9715 kHz |
| | | 9895 kHz | | | 9895 kHz |
| | | 11 930 kHz | | | |

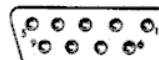
ANUS PHATES COWE Long Island, NY 516-698-4008
ADVENTURE BBS 516-621-9296
CBS LICA LONGS Long Island, NY 516-561-6590 *24
CONNECTION-80 Centerach, NY 516-588-5836
CONNECTION-80 Great Neck, NY 516-482-8491 *24
DRAGON'S LAIR Hewlett, NY 516-374-5071
LION Long Island Osborn Network 516-567-8267
LNU BBS 3001200 Rand Long Island, NY 516-724-9229
NIC & JOE COST. NEW VICTOR, FL TRS80 IN & IV Port
Washington, NY 516-944-7007
NET-MORIS PHATES'S TREN 516-627-9048
STAR TREK IN 515-559-0589 *24 run on ATARI 3001200
TIES Warragh, NY 516-781-1762 *24 7 days
TI SOURCE Long Island, NY 516-475-6463

RS232 connections

Interface 1

The RS232 socket is wired as follows:

1. No connection
2. TX data (input)
3. RX data (output)
4. DTR (input) this should be high when ready
5. CTS (output) this should be high when ready
6. n.c.
7. Ground (pull down)
8. n.c.
9. +9v (pull up)



An RS232 cable is available from Sinclair Research, which connects the 9 way D-socket to a 25 way D-plug (25 way D-sockets are common on RS232 peripherals). For details of how to obtain this cable, see the software and peripherals catalogue included with the ZX Interface 1. This cable is wired as follows:

2. TX data
3. RX data
5. CTS
6. +9v (normally DSR)
7. Ground
- 20 DTR

LETTERS TO LIST

CHICAGO, Illinois 60606

2 December 1982

Dear Mr. Jewell.

The 10 December 1984 issue of Infoworld magazine, p.23 states that an American Times 2400 computer can be connected to any British Sinclair Spectrum software, presumably using an American television as a monitor. Can you please send me as further information about this and about the Long Island Sinclair Times Group.

I recently moved to Chicago from London and did not bring a Sinclair Spectrum with me because it would not work with an American television, and did not buy a Times 200B because it would not run British software. I will appreciate any information you can send me.

Yours sincerely,

Yours truly,

(Donald Kay)

Dear Sirs:

Dear Sirs:

Mine is a story which you have read countless times before. It is a story which I joined the Soviet Comprising so I make it brief. I joined the Soviet Comprising in 1917 when you could only buy a piece of bread in the days when you could only buy a piece of bread. I have since been sufficiently impressed with my "Soviet" to tell you, a somewhat long story, a story which I have since been the happy owner of a piece of bread and more so than I have time to use. For the past year I have been the happy owner of a piece of bread and more so than I have time to use.

Yours truly,
The Soviet Comprising.

TS 706b Cash Computer.

TS/24000 Compaq
I want to have a subscription to SYAC...
Even though Times has told its best to destroy the T/S
product line (I refuse to buy any more of their garbage watches.)
I am still impressed with my computer's and would like to
continue to use and enhance both of my systems, hardware
and software alike. I'd like to see the T/S computer
TS/24000.

As a DP professional, I intend to develop and market software for the 1980s and 1990s machines. I would appreciate any information or advice you might give me to help me in my endeavor.

As a T/S man, I would also like to join a Union Group to help me keep in touch with developments. Please consider me as a likely candidate for membership. Enclosed is a \$100 whereby you may fund my membership info.

I hope to hear from you soon

Dear Paul -

I was a T/A 2048 who had all but given up hope for any support. I bought the 2048 just in time to see SVAL magazine go down the tubes (after subscriptions but fortunately not yet sold) and Times shut down the 500- info line. I was lucky enough to get a 2048 printer and the Technical Manual, but the only piece of software I found was a little spreadsheet called VU-CALC. It was refreshing to read of your existence in Informal (12/30/84 p.22), which has renewed my fantasies about software & peripherals.

Please send me membership materials and other relevant information. I am...

George Law, Jr.

G/1998/WJ 08028

P.S. - Are modern sk. ill available? Does your group have an electronic bulletin board? Looking forward to hearing from you.

Mr. Paul Kennedy
Secretary-Treasurer
Long Island Socialist-Workers Group
P.O. Box 438
Center Port, NY 11721

DATE OF DEATH: November 11, 1944.

Dear Mr. Donnelly,

Please send me more information on how to place the
please send only Miami in the time 2000. Also,
since I suspect there is an interface by which
you please indicate whether there is an interface by which
I can connect my 2000 to my Zenith 3-89/90 or my North Star
Macron.

100% Satisfaction

Please Reply
by 10/1/94

Yours very truly,
Malcolm B. Sauerberg
 Malcolm B. Sauerberg
 Secretary, 1643 94th

my my 100's

Dear Mr Donnelly,
I JUST READ ABOUT YOUR SINGAPORE GROUP AND
WAS WILDLY EXCITED ABOUT
IT. AND I WAS WILDLY EXCITED TO RUN
THE POSSIBILITY OF CONVEYING MY MESSAGE TO RUN
BRITISH SOFTWARE. COULD YOU PLEASE TELL ME MORE
ABOUT THIS. ALSO I WOULD LIKE MORE INFORMATION
ABOUT NEWLETTERS, MEETINGS, PUBLICATIONS, PROBLEMS
AND MEMBERSHIP.

Thank you,
Alan Zucker

Dear List:

suggestion for all terrain character set: BRIDGES -
written about in August 81 and 82 Science Digest.

Please send sample of newsletter and list of public domain software for 206A. If possible.

Was it an isolated case or was it by design that no cover letter was included with the QJ brochure recently sent by Sinclair Research? Photos were lighter and brochures were referred to in their generic sense.

Must use similar ~~any~~ use a cover letter. One that might have said, "In which, tell I-O-G-B-... " or one that read, "I-O-G-B-... in your 2006 when you buy a

Q." Perhaps, "QL price reduction, now only \$350, call..."
Or even, "Free qls and 68000 assembler if QL purchased
before..." Unfortunately, no cover letter was found.

Was it an oversight? Has it passed? Are current owners of Sinclair products valued by Sinclair? What are the reasons? All the more so since they can be bought for \$600 with a six drive. Price now runs \$1.25 for each in quantity 25, at this rate, the 60, may result in 25,000 more.

discovery sum.

Chief Trial

12-1-54

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1. *Environ. Biol. Fish.* 1997, 48: 171-180.

Wm. C. C. C.

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15T GROUP

LETTERS TO LIST

Long Island Radio Station
Group

January, at 0810

December 6, 1984

Dear Pat,

I received your drop from a recent visit to the University of Maryland and was intrigued by the opportunity to place the Spectrum team in the US. I would like to give you some more information about this and your group. As we know, I built a 1985 and several Spectrum programs on tape. I have had limited success in getting the radio to run since many cannot be turned to allow changes to memory addresses etc. I have no problem with the material from books and magazines - just the tapes.

On what I did with the Spectrum and the 1985, I have run with on the 1985, and give tapes of you. Some of the programs are not working. I would like to see the 1985 and the 1985 to be able to use them.

Thank you for your help.
(Steve Jennings)

1. I received
your mail on 12/11/84

Please send sample newsletter for your clarification. Computer could you please let me know the 1985?

Thank you,
J. J. Kennedy

17

12/1/84

Mr Paul Donnelly,
London Group

Dear Sir,
Real about your group in the world. I just want to say that I am very interested in your group and I would like to see your group. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter.

Thank you,
Kenny, 12/1/84

Paul Donnelly
L.I. Station Time zone
P.O. Box 430
Canaan, NY 11721

Dear Mr. Donnelly,
I am very interested in the Spectrum and I would like to see your newsletter. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter.

MICRO-DESIGN
TO: PAUL DONNELLY
L.I.S.T.

Enclosed find check for \$10 for 1 yr SUBS. To your L.I.S.T. Newsletter and group. Have read your newsletter in several publications and have found it interesting. 12/1/84. I am very interested in it. I would like to see your group and I would like to see your newsletter. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter.

W. Kennedy
SUSQUEHANNA, PA-16847

Yours -
W. Kennedy

12/6/84

Dear L.I. 715 users Group:

I am writing to you for information. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter. I have read your newsletter and I am very interested in it. I would like to see your group and I would like to see your newsletter.

Thank you,
Randy Blum

Bklyn, NY 11213

12/1/84

Dear LISTG,

Do you know of anyone that still sells DK Thomas keyboards for the TI-9900 and what the current price is. Also please send me info regarding your user group.

Thank you,

12/1/84

Randomtown, NJ 07133

November 5, 1984

LESTER M. BACHS

Dear Tim User Group:
Several of us in the Baltimore area, TI 9900 owners, who are happy to report that it is quite good, particularly at the time of the 1984. I am typing this letter using the TI 9900. I am happy to report that it is quite good, particularly at the time of the 1984. I am typing this letter using the TI 9900. I am happy to report that it is quite good, particularly at the time of the 1984. I am typing this letter using the TI 9900.

I am seeking a program that will make use of the TI 9900. I am seeking a program that will make use of the TI 9900. I am seeking a program that will make use of the TI 9900. I am seeking a program that will make use of the TI 9900. I am seeking a program that will make use of the TI 9900.

Yours truly,
Lester M. Bachs

LETTERS TO LIST

David S. Lee.

COULD YOU PLEASE SEND ME
INFORMATION ON THE
ARTICLE (REPRINT
MAYBE, OR PERHAPS A
BACK ISSUE?)
MENTIONED IN THE FOLLOWING
ADDRESS DOWNLOADED
FROM THE
ZEEBA SYSTEMS WEB.
ANY RESPONSE WOULD BE GREATLY
APPRECIATED.
ALSO WHAT IS "LIST"? A MAGAZINE?
IS IT THE COMPUTER OWNED? COULD
YOU PLEASE SEND INFORMATION ON
THAT ALSO?

Thank You!

150

STAMPED
06901

ALBERT GEORGE
T. ALBERT GEORGE

姓名: 王 强
 学号: 123456789
 日期: 2023.10.27

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18

Please add the enclosed copy of my latest book entitled THE GREAT
 I have borrowed from the Department of the Interior 10 copies of the
 Long Island Sound Thru-Drum.
 Mr. Fred Kennedy
 Department of the Interior
 Washington, D.C. 20540
 December 17, 1964

Gordon Postcard

4th Dec 1944
1944

[illegible]

WED. 10:00 AM. WADDI-1

I wish to thank you for your kind and helpful letter.
I have received it on Dec. 30. My tape recorder
is broken down so I cannot return to Radio Shack for repair.
I will be replaced at the same time.

Sincerely,
Butney

[illegible][illegible]

THESE RESULTS FOR YOUR KING POINTS ON LISTS AND RECORDS
I AM PREPARING THE ABOVE REPORT AND RECORDS
AND I WILL BE GLAD TO WORK WITH YOU TO
OBTAIN THE RESULTS YOU WANT TO OBTAIN.
I AM GLAD TO WORK WITH YOU TO OBTAIN THE RESULTS
YOU WANT TO OBTAIN. I AM GLAD TO WORK WITH YOU
TO OBTAIN THE RESULTS YOU WANT TO OBTAIN.

There are some letters to LIST - We get many more often asking the same question. A Corresponding Secretary could answer these and send our sampler to new inquirers.

Most of the letters you see here have been answered, albeit briefly, with some scribbling on the first page of the sampler package. I don't know that my quick answers will do any good, though.

As examples of what should have been said (all were sent sample packs and a short note):

To Donald Kay - You've been sent sample LISTing Pages which describe the emulator and ROM use. Can you get us Software/Hardware through contacts in UK? Do you visit?

To Mike Leidel - Glad to hear of your steadfastness - info sent.

To Malcolm Aucherman - RS232 would do the trick. You'll need software though.

To Ray Potter - Subscribe - R. Cunningham and R. Gilder have virtually a continuing series on this set up.

To Peter Jennings - You need a ROM or emulator, TS2040 and with Aerco's or Byte Back interface, any printer.

To Ed Cochio - Ed ROM's are even cheaper in U.K. My markup (\$18.00 to members), and even I consider it high, is just lower than his.

To Waiter K - Your back issues are on the way - we'll publish more ZX81 articles too - If someone sends them in.

To Ray Blum - Talk to Zebra - can you write an article for us?

Dennis Llenharts - Buy the UK Tronics keyboard from them £45-should get it to you for \$50.00 including shipping. They take Visa.

Lester Sacks - Jeff Street's word processor may help you. Also look at the ads in TS Horizons, Syncware News

Ray Potter (664.1) - You can use Aerco's interface as well. A hand wired big keyboard would work. Your letter was unfortunately ruined by heat during stay with USPS.

CATALOGS RECEIVED

VENDOR

Budget Robotics & Computing
Box 18616
Tucson, Az 85731

Sun-Ware
810 Mammoth Road
Alden, N.Y. 14004
716-547-2273 (after 6PM)

Pleasantrees Programming

Toronto Software World
PO Box 84
Agincoourt, Ontario
Canada M1S3B4

WMJ Data System
4 Butterfly Drive
Hauppauge, N.Y. 11788

Scott Foreman & Co.
1900 East Lake Avenue
Glenview, Ill 60025
(312) 729-3000

Poretzky & Poretzky, INC.
521 Argyle 1
Brooklyn, N.Y. 11218
(718-469-5948)

William Ware (Michael Williams)
1300 DePaul Way
Virginia Beach, Va 23464

K Soft Co.
845 Weliner Road
Naperville, Il 60540
(312) 961-1250

John F. Brosky
5960 Lannoo
Detroit, Mi. 48236

PRODUCT

Bruce Taylor has the Computer Continuum Line, and will soon (mid '85) market a Complete robot system, as described in his forthcoming TAB book; "Build a Micro-computer Controlled Robot"

Stan Light's Ad is printed in this issue

Paul Bingham will have a 2068 price list out soon

A limited number of Spectrum software titles, at "US" (not UK) type prices. Also has Software for the Forty Miner for the res arcade action on ZX81.

Now stocks Quicksilver and Software titles Has Romewitch for \$54.95. Will soon publish new newsletters "Quarters"

New book by Jim Stephens
Powerful projects with your T/S
256 pages \$12.95
ISBN 0-673-18038-7

Spec-Tax for 1985
TS 2068 program for 1984 taxes \$16.95

Products for TS/1000
PRO-FILE PLUS DATABASE \$14.95
Z-Trek \$9.95
Intruder Alert (Berzerk?) \$14.95

Tax return 1984 - \$18.00 + 1.50
1040 & A,B,C,D & E
TS1000 or 2068 - Takes Visa/MC

Has 16K RAM packs for \$18.00 plus postage

NEXT MONTH:

A Listing of the ZX/TS publications still in business both commercial & user groups.

MEMBERS

Do you subscribe to other TS User Group publications? We're compiling a list of these for the next issue. If you know of one with a good newsletter, please give us some feedback, or send a few sample pages of a copy of our newsletter to them. Do remind them though, that they must receive written permission from us to reprint any of the articles. (So far, most of the newsletters we've seen are doing quite well with their own material. In fact, we have only received one reprint request (From Synware News), to date). Remember, copies of other groups newsletters are in the "library".

This little gem is from the Mile High TSUG newsletter (They're in Aurora, Co.). The confusion between LIST C & LIST A is still prevalent, but at least, LISTA is not giving LISTC any black eyes.

Ralph Smith called last week to tell me that the Spectrum ROM that he ordered from ListLong Island Sinclair Times Users Group (\$28) arrived in 3 working days. He was very "happy" with their efficiency. A "Shortwave Listener" Rob Harrington has been in contact with me regarding joining the group. He lives in Lakewood and just got a Memotech RS-232 I/F for his 1800 and now waits eagerly for his modem. By the way, he tells me that the I/F is still available from Memotech at \$79.95 with a cable for \$19.95 plus \$4.95 shipping. Write to: Memotech Direct Sales Division, 99 Cabot St. Needham, MA 02194. (617) 449-6614.

MICRODRIVES UPDATE

BY N. PASHTOON

The Dec./Jan. issue of LIST carried an article on the microdrives, and the interface called the Twistor, which is required between the TS2068 and the Sinclair Interface 1. In the haste of meeting the LIST publication deadline, I had left out some of the RST XY for the shadow ROM in the Interface 1. These RST's follow:

- RST 28 : The 16K Home ROM error check is done. ERRNR should be loaded with the required error code before the RST.
- RST 30 : If the Interface 1 variables are not established, a RST 30 will create them.
- RST 38 : Interrupts on.

An update is also in order for the storage capacity of the cartridges. With two drives connected, I formatted ten blank carts. on the drive for which results were reported in the last issue. The average storage capacity came to 88.8 kB ± 1 kB. Formatting the same cartridges on the other drive resulted in an average storage capacity of 98.7 kB, with the highest storage at 102 kB and the lowest at 95 kB. Both drives are new, why there is a difference I have no idea.

In the paragraphs to follow, I will detail the redesign of the Twistor, which became necessary in light of tests with other TS2068's. Our editor thought that it may be of interest to hardware hackers to present my experimental observations, hypotheses, possible solutions in chronological order. If details like these bore you, then jump to the final solution at the end of the article. Otherwise follow the reasoning, and if you think you are reaching a different conclusion, then provide us with feedback, so we can sit and have a nice technical powwow. I am hoping to provide you with actual timing wave forms in the next issue of LIST (no promises).

Last month's report on microdrives for the TS2068 equipped with EMU-1 was based on extensive testing on two computers that I have. On these two machines the Twistor worked perfectly and consistently everytime. I typed and xeroxed last month's article, and had a demo. of the drives for the hardware hackers of our group on Dec. 16, 1984. The LIST mailing started on the 17th. On the 18th I got a new TS2068 and discovered that most of the time it crashed, and some times half finished microdrive error messages will appear on the screen. I assumed that that the rigid board design of the Twistor was responsible, causing poor connections at the edge connectors. After alot of juggling with board, I finally connected the Twistor by using a 12" long cable and the Olliger's expansion board. The computer started working, with some infrequent errors. The total length of the wires etc. connecting the computer and the Interface 1 came to 24". I assumed that possibly the shadow ROM is jumping the gun and grabbing the bus too early. The capacitance of the cable is causing delays and thus solving the contention problem. In order to simulate the effect of the cable capacitance with discrete caps., I estimated that the cable cap. can't be more than 50-60 pF.

Later measurements showed the capacitance between the wires to be between 25-30 pF. I didnot want to load the whole bus therefore I connected 91 pF caps to the control lines (only) leading to Interface 1. This didnot have much effect. Now reasoning that since RST08 is responsible for the turn on of the shadow ROM, i.e. when 0008 appear on the address bus that ROM is turned on, then a delay of A3 will improve things. When the 91 pF cap. was connected to A3 the computer started working consistently.

In order to isolate the problem, still thinking that the shadow ROM was jumping the gun, I put a delay in the A3 line. The delay consisted of one buffer from the CD4050 IC. The CD4050 gives a delay of 60 nS typically, up to 120 nS max., for 5V supply. This made matters worse. Even the good computers started to work erratically. The conclusion is that the problem is inside the computer.

At the January 6 meeting I asked members to bring in their computers for testing. 7 out of 10 computers worked ~~without~~ the cap. on A3. Two worked with the cap. in. One computer refused to work. I have been communicating the mods. to another TSUG, but they had absolutely no success. The same group provided me with info. on a group out West, whose micro drives would work some times. In another words, there definitely existed a problem to be looked into.

At the time the weather started to become cold. I noticed that on my bad computer, when it was cold, it would start misbehaving for the initial few minutes, and would work properly after warm up. The data sheets on memories showed that they respond faster at lower temperatures. In the mean time I did experiment with a dozen circuits like introducing one T state WAIT when the shadow ROM would turn on, to decoding circuitry using ROMCS from Int. 1 and the processor's RD, A13, A14, A15, MREQ, with the decoder feeding the BE input of the computer. Some of the circuits even successfully switched the banks. The problem still persisted; namely, the two good computers will work, and the bad one will either be crashing or giving the wrong messages.

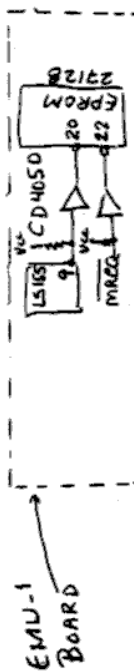
I should mention that the ROMCS from Int. 1 is an output. It goes tri-state when the Spectrum ROM is active, and becomes active high when the shadow ROM is active. This is an important feedback mechanism in the Spectrum where it is connected to the CE of the Spectrum ROM.

A cardinal rule that I follow, when doing hardware work on the TS2068, is that DO NOT IMPLEMENT ANY INSIDE MODS. on the computer. All mods. must be on the outside. The idea is, of course, to obtain a universal solution to a problem.

By watching the display of error messages on the bad computer for hours (literally) I found out that in a blink of an eye (probably 1/60-th of a second) the correct error message did appear on the screen, but then gibberish will be displayed. My conclusion was that the shadow ROM was

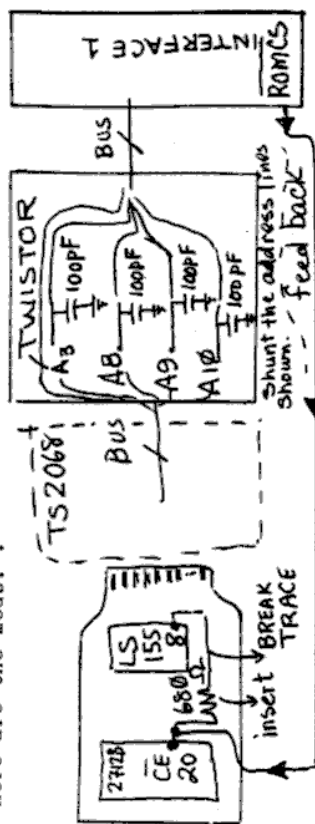
turning on properly, but that the turn off was a problem. A study of the ROM disassembly, and the literature at hand revealed that when address 0700H was in the PC, and hence on the address bus, the shadow ROM will turn off. Since 0700H had the A8,A9,A10 bits set, I argued that a delay of these three bits would help. As such I put 91 pF caps on these three lines. Lo and behold, the problem got solved. I must mention that thus far in my experimentation not alone the printer, but any other peripheral on the Spectrum bus (behind the Int.1) will cause all the computers to be in a crash state. I attributed the problem to the excessive loading of the bus. But with caps on A3, A8, A9, and A10, now for the first time the printer started working. That night the temperature was cold (in the teens) outside. I took my bad computer, Int.1, the emulator and put it outside for half an hour, when I turned it on it worked the first time around. I left the system on for 8 hours and it did not malfunction even once. The solution was communicated to the other TSUG the feedback was that it did not work. It was not making sense! I went to work to collect some timing data. While doing that, I zapped my EMU-1. Very probably static got it since every few minutes I was installing the EMU-1 in the good computer and then in the bad one. I did not know at the time, but it was a lucky coincidence. Being desperate to continue experimentation, I successfully was able to use the Spectrum ROM as an emulator, and make it work with the drives (more on this, may be in a future issue of LIST).

I ordered another EMU-1 and tested it with my computers. With all the suggested mods on the Twistor, all of them were continuously in a crash state. In other words I was now in the same boat as the other TSUG. Consulting with the manufacturer of EMU-1 there was no code changes in the contents of the EPROM. I programmed EPROMs, again the same result. So vive la difference? A comparison of the zapped EPROM and the EPROM on the new EMU-1 revealed that originally EMU-1's were programmed on 300 nS chips, but the new batches were programmed on 250 nS EPROMs. In other words, a time of 50 nS was making all the difference. So I set out to simulate a low speed EPROM. The following circuit was tested on the EMU-1 board by breaking the traces to the CE and OE, and inserting the CD4059 buffers to create an artificial delay.



The result of the experiment was that all three computers got out of the continuous crash state, and would work from time to time. Note that the simulation is not perfect, since we will need to delay all the 16 address lines also. There is not that much space on the EMU-1 board. All this information was relayed to the other TSUG. While I am writing this I got a call from them, that for the first time there computers are working with the Int-1 when they replaced the 250 nS chip with a 300 nS chip in the EMU-1.

Now I had to address the problem of the 250 nS EMU-1's. Note that all the experiments so far were the so called open loop type. In other words when such a nice feedback signal is available from Int.1 like ROMCS, signalling the computer when it is active, it should be used. The fastest way to provide such feedback to the DOCK bank in TS2068 is a hardware connection between the EMU-1 and the Int.1. I grant you that the same is achievable by using the BE input of the computer, as mentioned earlier, and one would be tempted to call it an elegant solution. But the penalty is the use of one or two very fast chips. Any way, I believe the solution to be universal and should work on all TS2068 computers. All my three computers work perfectly and with the printer load attached. Here are the mods.:



CONCLUSION: A) The reason some of the TS2068 computers will not work with the microdrives, even with a 300 nS EPROM in the EMU-1 is the bus contention between the Int.1, and the EPROM on the EMU-1.
B) A 300 nS EPROM on the EMU-1 if used in conjunction with the caps. on A3,A8,A9,A10 does solve the problem even in an open loop configuration.
C) Closing the feedback loop, as per diagram above, and the caps. does solve the problem even with a faster EPROM in the EMU-1, and as such is a universal solution.

AFTERTHOUGHTS: The problem of ringing on the address lines can't be ruled out. More measurements are required. An experiment with a 450 nS EPROM is called for. This will reduce the cost of EMU-1's. I will report on such an experiment in the future.
Some hardware hackers will take an issue with the dirty and fast solution of putting caps. on the suggested address lines. The value of 100 pF is also excessive, and will tell me that it is a no-no in microprocessors system design. My response is show me one microcomputer that do not use it. To witness, open up your TS2040 printer. What are all those caps doing on the address and data lines? I very well recall desoldering them, because it will not work with another peripheral on 2X-81. The removal of the caps. did make the system work. For that matter, if you open your TS2068, you will notice caps near the edge connector. NAP Jan.19,1985

A CROSS-CORRELATION OF THE SPECTRUM ROM VERSUS TS2068

Part 2

Copy Right ©, Aug. 1984 . By N.A. Pashtoon

Beside Logan's book mentioned in Part 1, one needs to have a good disassembler . There are various disassemblers available for the TS2068. In an earlier issue of LIST Paul had reviewed the one written by Dick Scoville of Triangle Users Group. Scoville's diassembler is written in Basic. It is a simple disassembler, but does its job well . For the price (\$5.00) one can't beat it . Zebra is also marketing the Crystal Computing diasassembler. This product (the Spectrum version) is officially approved by Sinclair Research, and matches the Zeus Assembler . It is a good , sophisticated disassembler with many functions from block moves to including a breakpoint in your code , and register displays. The last disassembler I like to mention is my favorite since the ZX81 days , namely the HOT Z , written by Ray Kingsley. The HOT Z is both an assembler and disassembler. To give you a full description of its capabilities will require a full long article . Suffice it to say , that it can do almost any thing that other assemblers and disassemblers can do and more. The product was developed specifically for the TS2068. There is both cassette (\$24.95) and cartridge (\$60.00) versions available. The nice thing about the cartridge version is that it uses only a few hundred bytes of your RAM. The program itself is in the DOCK bank , shadowing the RAM. The most important feature of HOT Z is that it has a very large NAMES file , which will label all important routines in the TS 2068 ROMs.

ROM ATLAS

COPY RIGHT N.A. PSHTOON , © AUG., 1984

| SPECTRUM | | | SPECTRUM | | | TS 2068 | | |
|-----------|------|---------|----------|------|---------|---------|------|---------|
| LABEL, | ROM | IS 2068 | LABEL, | ROM | IS 2068 | LABEL, | ROM | IS 2068 |
| NAME | Addr | NAME | NAME | Addr | NAME | NAME | Addr | NAME |
| INDEXER | 160C | 136B | SEARCH | 1C79 | 180C | DYADIC | | |
| | | 1374 | SRCHSC | 1C82 | 18C5 | 1E86 | | |
| CLOSE | 16E5 | 139F | CLOSE | 1C8A | 18ED | SYNERM | | |
| | 16EB | 13A8 | RSTSTR | 1C8C | 18F8 | 1E8D | | |
| CLOSE-2 | 1701 | 13BC | CLCHAN | 1C96 | 18F9 | 1E8E | | |
| OPEN | 1736 | 142A | OPEN | 1CDE | 1C49 | OPTHO | | |
| OPEN-1 | 1756 | 145E | OPCHAN | 1CEE | 1C51 | STK-0 | | |
| OPEN-2 | 175D | 1465 | CAT | 1CF0 | 1C58 | STOP | | |
| CAT-ETC | 1793 | 25C8 | LIST | 1D03 | 1C78 | FOR | | |
| AUTO-LIST | 17F5 | 1541 | K-LLST | 1D56 | 1D29 | SKIP | | |
| LLIST | 17F9 | 1545 | K-LIST | 1DAB | 1D55 | NEXT | | |
| LIST | 1860 | 15AC | LPO | 1DEC | 1E82 | READ | | |
| OUT-LINE | 1855 | 15A1 | PUT-SR? | 1E27 | 1E82 | DATA | | |
| OUT-LINE2 | 1870 | 15C9 | PUT | 1E42 | 1E90 | | | |
| NUMBER | 18B6 | 1602 | | 1E4F | 1E94 | RAND | | |
| OUT-FLASH | 18C1 | 160D | FLASHA | 1E45 | 1E94 | REBIC | | |
| OUT-CURS | 18E1 | 162D | PR-CUM | 1E5F | 1E94 | COIT | | |
| LN-FETCH | 190F | 165B | NEXT-L | 1E67 | 1E91 | JUMP | | |
| LN-STORE | 191C | 1666 | DE-HL | 1E7A | 1F04 | | | |
| OUT-SP2 | 1925 | 1671 | | 1E90 | 1F04 | | | |
| LINE-ADDR | 196E | 16D6 | FIND-L | 1E95 | 1F0F | | | |
| CP-LINES | 1990 | 16F9 | CP-BC | 1E94 | 1F1E | FIX-UI | | |
| | 1988 | 16E0 | SUBLIN | 1E99 | 1F23 | FIX-H | | |
| | 198B | 16F3 | SUBLN1 | 1F9F | 1F29 | ERRB | | |
| EACH-SMT | 19D0 | 1745 | RECLEN | 1EAC | 1F2E | | | |
| NEXT-ONE | 19E5 | 174D | DEL-DE | 1EAF | 1F36 | CLAR | | |
| DIFFER | 19E8 | 1750 | DELREC | 1EED | 1F39 | CLR-BC | | |
| RECLAIM-1 | 19F8 | 1768 | LINEHO | 1F05 | 1F6B | CD-SUB | | |
| RECLAIM-2 | 1A1B | 1798 | PUT-BC | 1F15 | 1F7C | CHK-SZ | | |
| E-LINE-NO | 1A28 | 1795 | PU-LN | 1F23 | 1F94 | ERR4 | | |
| OUT-NUM-1 | 1A30 | 179D | SYNTAX | 1F3A | 1F9F | RETURN | | |
| OUT-NUM-2 | 1B17 | 1A27 | LS4 | 1F54 | 1F9F | PAUSE | | |
| OUT-NUM-3 | 1B29 | 1A47 | | 1F60 | 201D | BREAK | | |
| LINE-SCAN | 1B6F | 1AB2 | | 1F60 | 201D | DIF | | |
| SMT-LOOP | 1B7A | 1AB9 | | 1F60 | 201D | SOUND | | |
| SEPARATOR | 1B7A | 1AB9 | | 1F60 | 201D | | | |
| SMT-RET | 1B8A | 1AB8 | EXCUTE | 1F60 | 201D | | | |
| LINE-RUN | 1AEC | 1B9C | | 1F60 | 201D | K-LPR | | |
| LINE-NEW | 1B82 | 1B00 | | 1F60 | 201D | K-PRN | | |
| REN | 1B82 | 1B00 | | 1F60 | 201D | P-SEQ | | |
| LINE-END | 1B82 | 1B00 | | 1F60 | 201D | | | |
| LINE-USE | 1B82 | 1B00 | | 1F60 | 201D | | | |
| NEXT-LINE | 1B82 | 1B00 | | 1F60 | 201D | | | |
| ST-IT-RET | 1B82 | 1B00 | | 1F60 | 201D | | | |
| CHECK-END | 1B82 | 1B00 | | 1F60 | 201D | | | |
| SMT-NEXT | 1B82 | 1B00 | | 1F60 | 201D | | | |
| CLASS-01 | 1B82 | 1B00 | | 1F60 | 201D | | | |
| REPORT-2 | 1B82 | 1B00 | | 1F60 | 201D | | | |
| VAL-FET-2 | 1B82 | 1B00 | | 1F60 | 201D | | | |